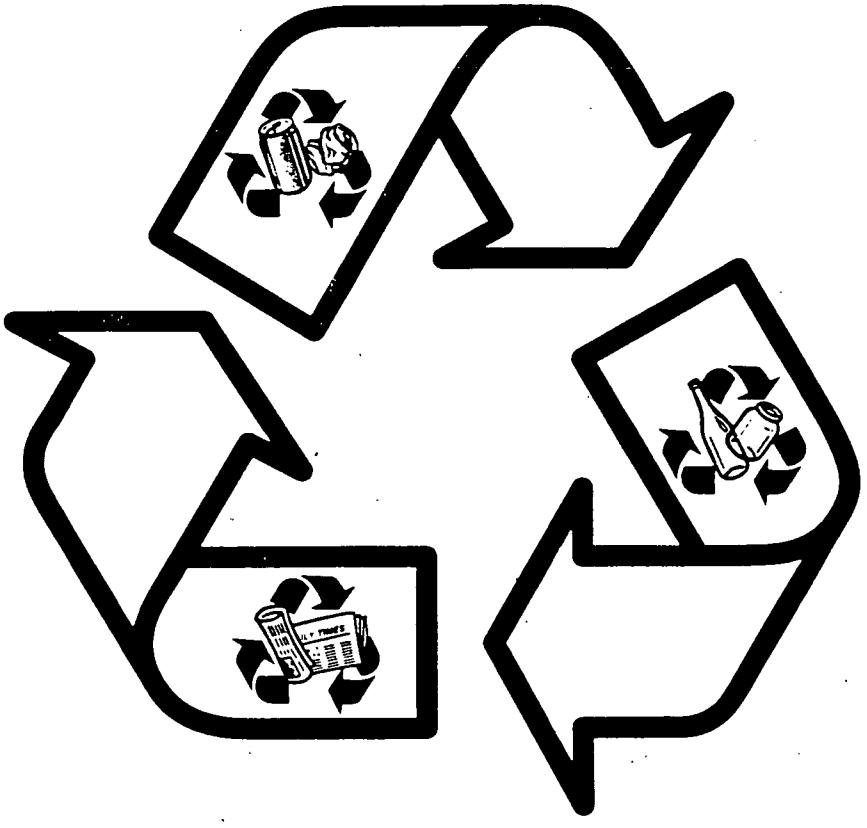
Recycled Feedstock: Company Case Studies



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Section 1

ALUMINUM

Company name:	**REYNOLDS METAL COMPANY**
Address:	6601 W. Board Street, Richmond, VA 23261
Contact person and job title:	Terry Olbrysh, Public Relations
Date business started:	1919
Recycled Feedstock:	Aluminum
End Product:	Aluminum extrusion, sheet, and cans

Reusing Aluminum Waste

Reynolds Metal Company was started in 1919 as U.S. Foil and changed to its current name in 1928. Reynolds has operations throughout the United States with plants generally located in close proximity to heavy recycling areas. Company-wide employment is currently at about 29,000 employees.

Aluminum is the recycling feedstock of choice for Reynolds Metal Company. Their supply of aluminum comes from a variety of sources including beverage cans and an increasing amount of household aluminum foil. Lower production costs and energy costs that may be as low as one-twentieth of the costs realized with the production of primary aluminum are some advantages associated with using recycled aluminum. Terry Olbrysh, Public Relations Manager at Reynolds, says that disadvantages do exist however. There is typically some weight loss resulting from paint (label) evaporation when recycled beverage cans go through the meltdown process. Because recycled aluminum is purchased by weight, manufacturers such as Reynolds end up paying for some material that cannot be effectively processed and reused. Reynolds uses recycled

aluminum feedstock to produce extruded aluminum products, aluminum sheet material used in transportation, building, and construction markets, and more aluminum cans. An average Reynolds reclamation processing facility is about 100,000 to 200,000 square feet.

With the increasing popularity and attractiveness of recycling and environmentally aware operations, Reynolds Metal Company plans to expand the size and scope of its operations. In 1993 Reynolds used approximately 11 billion recycled aluminum cans throughout its manufacturing operations. Post-consumer waste was the source of about 33 percent of these cans.

Olbrysh cites the increased recycling of aluminum products not historically recycled as one of the future trends in aluminum recycling. Household foil for instance has only recently become substantially recycled and its use is increasing. Another trend recognized by Olbrysh is a dramatic growth in the use of aluminum by the automobile manufacturing industry. Automobile designs are increasingly incorporating the use of light materials such as plastic and aluminum. According to Olbrysh, on average about 85 percent of a vehicle is recycled. Of the aluminum in the vehicle, only 60 percent is recycled due to the fact that some aluminum applications such as castings must be primary metal.

Section 2

BATTERIES

Company name:	**EAST PENN MANUFACTURING CO., INC.**
Address:	Deka Rd., Lyon Station, PA 19536-0147
Contact person and job title:	Jim Sikora, VP Marketing
Date business started:	1946
Recycled Feedstock:	Used lead-acid batteries
End Product:	New batteries

Getting the Lead Out

Over 98% of all used lead-acid batteries are recycled today. East Penn Manufacturing Co. has been in the business of recycling batteries since 1946, and currently recycles 25,000 batteries per day. On average, each battery contains 18 pounds of lead, two pounds of plastic, and one gallon of acid. More than 75 million lead-acid batteries are discarded every year.

East Penn began using recycled lead-acid batteries because of the environmental concerns of disposing such a large quantity of lead, plastic and acid. If no batteries were recycled, more than 1.35 billion pounds of lead would be going into the environment each year. Also, more than 150 million pounds of plastic and 75 million gallons of acid would end up in the non-recycled waste stream each year. Through recycling lead-acid batteries, East Penn is helping the environment while also reducing its materials cost for the production of new lead-acid batteries. In addition, the venture created several new jobs.

The feedstock for the lead-acid battery recycling is obtained through a return program set up with battery sales organizations. For example, when automobile owners purchase a replacement battery for their vehicles, they trade in the scrap battery to the retail outlet. These batteries are then returned to East Penn on the same truck that brings new inventory to the battery retail outlet.

Scrap lead-acid batteries are placed in a machine that breaks the battery apart and separates the plastic, lead, and acid. Each of these components then move to their respective reclamation process. Before lead is used in producing new lead-acid batteries, it must go through a lead reclamation process. This involves processing the lead through a smelter and then being fed to a refinery. The plastic is reclaimed and used to produce molded cases and tops for the new batteries. Acid goes through a patented acid reclamation process which prepares the acid for use in the new batteries. Some virgin materials are used in the production of the new batteries. However, all materials recovered from the scrap batteries are recycled.

East Penn plans on expanding its production of recycled lead-acid batteries. With the company's closed loop approach and the cost reductions it has achieved through the use of scrap batteries, East Penn represents an excellent example of recycled feedstock manufacturing.

Section 3

CONSTRUCTION

Company name:	**ReClaim, Inc.**
Address:	8001 N. Dale Mabry, Suite 101, Tampa, FL 33614
Contact person and job title:	John Kraft, Director of Corporate Development
Date business started:	1987
Recycled Feedstock:	Discarded asphalt roofing debris
End Product:	Road asphalt

Recycling Your Roof...To Repair Your Road™

ReClaim, Inc., a recycler of discarded asphalt roofing debris, was founded in 1987 and began recycling operations in 1988. With sites in Kearny and Camden, New Jersey, ReClaim recycles approximately 200 tons per day of pre-separated, pre-sorted asphalt roofing scraps into useful asphalt-based paving and patching products.

Currently, ReClaim manufactures asphalt roofing material into three patented products. RePave® is a permanent pothole patch which is marketed commercially to state and local road maintenance departments, and at the retail level through home improvement chains and hardware stores. ReActs HMA™, a 100% post-consumer recycled product, is used as a hot mix additive/modifier in asphalt pavement and has proven superior to conventional asphalt paving materials. ReActs IP™, also a 100% recycled product, has a wide variety of uses in paving maintenance and roofing repair mixtures such as sealants, coatings, caulking, paints and asphalt surfacing products.

One of the main reasons that ReClaim began recycling is the high cost to dispose of waste material in landfills in the state of New Jersey. The cost to dispose of asphalt

base material (depending on the county) can range from $65 to $125 per ton. Since ReClaim consumes approximately 50,000 tons of material per year that otherwise would have gone to landfills, there is a considerable environmental and economical impact on the local communities within New Jersey. To date, the company has recycled more than 350,000 tons of discarded asphalt roofing scrap.

Currently, Reclaim is processing all the material at their New Jersey facilities. However, they are planning to start processing at a new Florida site in the near future. The entire company employs 40 people to recycle 100,000,000 pounds of discarded asphalt roofing debris each year.

Future plans call for national distribution of ReClaim's patented recycled products, particularly RePave® and ReActs HMA® to state and local Department of Transportation and Department of Public Works. In addition to Tampa, new plant sites are scheduled for Philadelphia, St. Louis, the Northwest and at least one California location.

Company name:	**SOIL SAFE**
Address:	4600 East Fayette St., Baltimore, MD 21224
Contact person and job title:	Jim Grant, Director of Business Development
Date business started:	1990
Recycled Feedstock:	Contaminated soil
End Product:	Road base

They've Hit Paydirt

Soil Safe's genesis began with the introduction of two men from different industries. Walter H. Kennell, Vice President of Soil Safe, as an engineer for a major oil company was in charge of renovation and destruction of old gas stations as well as the construction of new stations. One of the most difficult problems he faced was the disposal of petroleum contaminated soil (PCS). At the time the typical method of disposal was landfill. Mr. Kennell was uncomfortable with disposing of the soil at overburdened landfills.

Mr. Kennell was introduced to F. Arthur Duduk, a paving contractor with 30 years of experience in the paving industry. Mr. Kennell and Mr. Duduk agreed that PCS could be put to beneficial reuse in the paving industry. Soil Safe was designed around beneficial reuse concept of processing the soil through an encapsulation, or stabilization/solidification process and using the recycled material in the construction of roads, parking lots, runways, and landfill caps and liners.

Prior to acceptance at Soil Safe's facility, soil is tested and regulated under strict acceptance parameters to assure that they accept only *non-hazardous* PCS. When trucks bring acceptable soil into the facility, the soil is off-loaded and goes through several screening processes where the aggregates are separated. Next, the material is blended into specific ratios depending on its end use. The additives and the soil blend are fed into the processing plant and the matrix is mixed. The material which results is a high quality sub-base, made entirely from recycled soil, that has been proven to be environmentally compatible. According to Jim Grant, Director of Business Development at Soil Safe, the recycled product typically contains less than 0.1% of petroleum hydrocarbon contamination, whereas hot mix asphalt contains 30-35% of this type of contamination. Mr. Grant states that Soil Safe continues to perform quality assurance and control testing on the material and they also make environmental evaluations of downstream material on a random basis.

Soil Safe has facilities located in Baltimore, Maryland and Savannah, Georgia for processing PCS. Soil Safe recently increased capabilities to include on-site processing of contaminated soils and industrial waste. They have the ability to set up a portable plant in a contaminated area to process and reuse the contaminated soil. Soil Safe has several on-site projects in process, including the handling of metal contaminated soil. Soil Safe's clients save on soil treatment costs while the end user is simultaneously able to save on paving costs. Soil Safe's recycling services are available for on-site projects nation-wide.

Section 4

GLASS

Company name:	**ROSEBURG PAVING CO.**
Address:	P.O. Box 1427 Roseburg, OR 97470
Contact person and job title:	Steve Loosley, Owner
Date business started:	1946, Involved with recycling since 1991
Recycled Feedstock:	Glass
End Product:	Modified Asphalt

Glass and Asphalt May Not Mix

Generally, when people drive down the road and see glass laying in the path, they try to avoid it. So why is a company in Roseburg, Oregon, mixing hundreds of pounds of glass in road asphalt hot mix? According to Steve Loosley, owner of Roseburg Paving Company, "It's all in the name of research." In 1992, Roseburg Paving Company was awarded a contract from Douglas County, Oregon, to produce a variety of asphalt configurations that utilized recycled glass. This contract analyzed the feasibility of creating markets for recycled glass by adding 3/8" recycled glass particles to asphalt hot mix.

In the past, glass particles have exhibited adhesion problems with asphalt. The Rosenburg project utilized percentages of glass ranging from 5% to 15%, with varying percentages of lime. Rosenburg concluded that the combinations studied met or exceeded the serviceability requirements for an asphalt pavement. If glass content exceeds 15%, a small amount of glass ravels.

The addition of glass to asphalt has increased the price per ton to produce the total mix. Loosley feels that the cost of combining glass and asphalt is, at this time, not

justified. He stated that an alternative means of consuming glass worth considering is to mix the glass with road base. In this case, the size of the glass and the mix ratio are not as critical as when used in asphalt; upwards of a 20% ratio of glass to base could be a feasible mixture.

Roseburg Paving Company also recycles old asphalt, which is removed with an excavator and taken to their plant. The old asphalt is crushed in a standard cone crusher and reused in the hot mix process. The facility in Roseburg currently employs about 180 people.

Company name:	**TERRA-GREEN TECHNOLOGIES, INC. (STONEWARE TILE DIVISION)**
Address:	1650 Progress Drive, Richmond, IN 47374
Contact person and job title:	Lynn Brown
Date business started:	1987
Recycled Feedstock:	Glass
End Product:	Ceramic tile for residential and commercial applications

A Tile Tale

Terra-Green Technologies, Inc. is the world's only ceramic tile manufacturer using recycled glass. Why recycled glass? It is both environmentally responsible and gives Terra-Green products exceptional beauty and performance. The recycled glass accepts colorants and reproduces them in clear, undistorted hues which cannot be duplicated in traditional tile production. Today, depending on the product line, the company's tile contains between 55% and 65% post-industrial and/or post-consumer glass.

The company has refined its Glass-Fusion™ manufacturing process over the past eight years. This process yields a surface providing unmatched stain resistance; virtually all stains, including tough stains like a permanent marker, can be easily removed without the use of chemical cleaners.

Presently, Terra-Green manufactures two lines of ceramic tile. Tierra Classic is a semi-rustic tile for residential and light commercial application (e.g. professional offices, and boutiques), while Traffic Tile is excellent for high-wear commercial applications (e.g. cafeterias, transit stations, banks, and fast food restaurants). Both products are offered in

offered in a wide range of colors and sizes. They are competitively priced with other high quality ceramic floor tiles, despite the additional raw material cost for recycled glass.

Terra-Green's commitment to the environment extends beyond the use of recycled glass. No toxic materials are used and no toxic waste is generated in the Richmond, Indiana plant. In addition, the Glass-Fusion™ process fires the tile at lower temperatures to conserve energy.

Section 5

OTHER

Company name:	**DEJA SHOE**
Address:	7165 S.W. Fir Loop #200, Portland, OR 97223
Contact person and job title:	Robert C. Farentinos, VP Environmental Affairs
Date business started:	1992
Recycled Feedstock:	PET, Cotton canvas, tires, polystyrene and others totaling 22 types of recycled materials
End Product:	Footwear

Footwear from Recycled Materials

A company in Portland, Oregon, has found a way to make footwear from recycled materials. Deja Shoe manufactures shoes that contain approximately 45% recycled materials by weight. The materials used include: recycled PET (beverage bottles), tire rubber, cotton canvas, polystyrene and other materials, totaling 22 different kinds of recycled materials. The lining of some shoes are made of recycled PET, and shoe bodies may be constructed of a variety of materials, including "Eco Fibre," a recycled cotton canvas material.

Deja Shoe's Communications Manager, Mary Campbell, says that manufacturing comfortable and reasonably priced footwear out of recycled and plant materials has been the main focus of the company since it began in 1992. Benefits associated with this focus include saving resources through creating a viable market for recycled materials, while reducing the amount of materials being sent to landfills. Company founder Julie Lewis felt there must be something that could be manufactured out of recycled materials, and considered the possibility of footwear. Lewis also wanted to establish a precedent and be

an example to other companies. Deja Shoe has succeeded with this concept by developing a high-quality product and educating consumers to eliminate some of the prejudices associated with recycled material. Campbell cites that the quality and durability of the recycle-content footwear can be equal to, and in some cases better than, footwear made of virgin materials. Constant testing of materials used has been essential in determining the quality and durability of the footwear. Deja Shoe, in tandem with other companies, has done extensive R&D on a great variety of materials and processes in order to improve its products.

Oregon is a progressive state when it comes to recycling, and the footwear industry is well established in the state (Nike, Adidas America, and Avia). Lewis felt that these factors contributed to an environment that would aid in the establishment of her company. Julie Lewis was awarded a grant to produce a prototype shoe and interest and support from top footwear industry experts followed.

Deja Shoe is constantly informing its customers about the recycled and botanical plant materials used currently and the possibilities in the future. Deja Shoe is featured in *Real Goods*, a catalog of "environmentally oriented" products. As the trend toward environmentally conscious manufacturing and recycling continues, Deja Shoe is growing as well. Deja is currently expanding with 15 distributors throughout various western European countries and Japan. Deja Shoe's headquarters is responsible for marketing and developing the footwear, but is not involved in the actual production of the shoes. The manufacturing of the footwear is done off-site by subcontractors in China. Deja uses

Taiwanese owned and managed factories which do not pose the human rights issues currently associated with factories operated by the Chinese government. The warehousing and shipping of the products is centered in Washington state while the sourcing of materials is essentially global. Deja Shoe gets its cotton canvas from "Eco Fibre" of Canada, hemp from Hungary, and its leather alternative "TerraGuard"™ from the U.S. Leather Company. TerraGuard™ is stronger, lighter and more breathable than leather. Deja Shoe also uses another leather alternative, Vegetal Leather™ (a cotton-backed latex material), produced by rubber tappers and Indians in the Brazilian Amazon.

Deja Shoe realizes that simply manufacturing footwear using recycled and sustainably harvested plant materials will not guarantee the popularity of the shoes. Deja therefore, places high priority on the price, fit, and styling of all models. Moreover, the footwear is delivered to the customer in a 100% recycled cardboard shoe box, which can be turned inside out to be reused as an attractive gift box. The box can also be used to mail back worn out shoes to the company. What does Deja Shoe want the used footwear back for? To recycle, naturally.

Section 6

PAPER

Company name:	**AMERICAN INSULATION, INC.**
Address:	P.O. Box 91, Bloomer, WI 54724
Contact person and job title:	Terri Stelter, General Manager
Date business started:	1978
Recycled Feedstock:	Paper
End Product:	Fire proof insulation (blown-in)

Playing with Fire

American Insulation, Inc. began in 1978, a result of the realization that there was a need for fire proof insulation. In the 1970's, cellulose insulation became more popular and, at that time, there was also an abundance of newsprint material available. By processing recycled newspaper, which they get from recycling brokers, American Insulation, Inc. is able to manufacture fire proof insulation. They consume about 6,000 tons of recycled newspaper per year to manufacture the end product, using standard equipment typically found in this type of manufacturing. For example, a hammer mill is used to extrude the paper through a screen to create the insulation's shape.

At present, American Insulation, Inc.'s facility in Wisconsin is 10,000 square feet and employs 20 people. Once the newspapers are received at the facility, they go through the first grinding stage, where nothing is added. After this process, the ground paper is sprayed with fire retardent chemicals. The paper then proceeds to the second grinding stage where it is ground into even smaller fibers. Once the fibers leave this stage, they

are baled up and shipped out from the facility. The insulation is used for both houses and commercial buildings, where it is either blown into attics or onto side walls.

Terri Stelter, General Manager, feels that a major advantage of using the recycled newspaper is that it has a higher R-value (thermal resistance) per inch than fiberglass. Ms. Stelter said the disadvantages of using recycled newspaper are the decreasing availability and increasing cost of newspaper. American Insulation, Inc. has no plans to expand at present due to this shortage of newspaper.

Company name:	**FORT HOWARD CORPORATION**
Address:	1919 S. Broadway, Green Bay, WI 54307-9130
Contact person and job title:	Cliff Bowers, Director of Communications
Date business started:	1919
Recycled Feedstock:	Post and Pre-consumer paper material
End Product:	Sanitary Paper Products

The Paper Chase

Fort Howard Corporation was formed in 1919. It has been using paper feedstock for about 50 years, the need for which arose during World War II. During that time, virgin pulp was in short supply, so other sources for paper products had to be identified. Each year, Fort Howard Corporation consumes 1.4 million tons of post-consumer and industrial recycled paper products. These products are obtained through curbside and office paper waste collection, and from wastepaper dealers and brokers throughout North America.

After the paper goes through processing, the end result is sanitary paper products such as paper towels, bath tissue, paper napkins, etc. The company has formed a subsidiary whose main purpose is to create relationships with office managers and others in order to increase the amount of office paper products collected. At present, Fort Howard Corporation has the ability to process 50 different grades of waste paper.

Fort Howard Corporation currently has four large plant sites, one of which is located in the U.K. Each is very self-sufficient in managing the use of the paper waste

materials, and almost all products are manufactured using 100% recycled materials. A few products require the addition of virgin materials to the paper feedstock due to the nature of these end products. The processing of the paper involves both mechanical and chemical processes, and any waste tissue created is again recycled. Cliff Bowers cited the reduction of landfill use and the saving of resources as two advantages of using recycled rather than virgin material.

In the last few years, Fort Howard Corporation has expanded in size at a rate greater than all of its competitors combined, according to Bowers. The company has plans for enhancement of its product lines and facilities as future market demand permits.

Company name:	**HOUSE OF DOOLITTLE**
Address:	701 Lunt, Elk Grove Village, IL 60007
Contact person and job title:	Mary Rosen, Director, Sales & Marketing
Date business started:	1919
Recycled Feedstock:	Paper
End Product:	Calendars, appointment books, blotters, and related products

Don't Let the Name Fool You

The House of Doolittle, a paper converter, has been in the business of making calendars, appointment books, and related products since 1919. Approximately six years ago, the company decided to manufacture its entire line of products (around 200 items) from recycled paper instead of virgin material. This decision was a bold one, since it was made ahead of consumer demand. The company currently has mills producing recycled paper superior in quality to the non-recycled paper used in the past. And they are able to do this, surprisingly, at no extra cost. Doolittle's products were targeted to a distinct niche even before they had recycled content and Mary Rosen says that the recycled content just adds another important value to customers.

House of Doolittle employs 26 people in their Elk Grove, Illinois, facility. Its main markets are office products stores, the advertising specialty industry, and educational markets. With annual sales of $5 million, the switch to recycled materials has been a profitable one. House of Doolittle had the first and only announced recycled

calendar line in major distribution. They've expanded and strengthened their calendar line with over 40 new products, including Bar Harbor wall calendars and an attractive group of appointment planners and pocket calendars. The recycled content information is displayed on all of the products' packaging, and all printing is done using soy-based inks. In addition, House of Doolittle donates five percent of its profits to environmental organizations. According to Rosen, perhaps four out of five consumers will choose the lowest priced product, but Doolittle is going after that fifth consumer who sees a quality and environmental benefit of their product line. It is obvious that House of Doolittle feels consumers who share its recycling beliefs will be more inclined to purchase its products than those who don't.

The House of Doolittle wants to continue the push for more post-consumer paper in their products. Rosen says that 25% post-consumer content by 1994 is not unreasonable. This increase in post-consumer content should satisfy the growing public demand for increasingly beneficial environmental products. House of Doolittle is also looking to increase its penetration in the academic marketplace through more aggressive marketing and new product development. With governmental agencies mandating the purchase of recycled products and consumers demanding environmentally friendly products, House of Doolittle is in a good position for continued success.

Company name:	**SIMPSON PAPER COMPANY**
Address:	400 Capitol Mall, Suite 900, Sacramento, CA 95814
Contact person and job title:	Mark J. Pawlicki, SW Regional Public Affairs Manager
Date business started:	1894, started recycling in the 1970's
Recycled Feedstock:	Used paper
End Product:	Paper

Paper, Paper, and More Paper

According to Mark Pawlicki, Public Affairs Manager at its Sacramento office, Simpson Paper Company presently recycles approximately 200 tons of paper per day in California. For the last 20 years, Simpson Paper has dedicated time, money and research to the development of new and innovative ways to use recycled paper, without the aid of government subsidies or mandates.

Simpson receives paper both from post-consumer (approximately 10%) and post-manufacturing (approximately 90%). Of the variety of paper that Simpson recycles, some is manufactured into text and cover, while others are turned into paper for bags and boxes. One of the key factors affecting the final outcome of recycled paper is the length of the fiber. As paper is recycled over and over, the length of the fiber (wood pulp) is shortened, which inherently reduces the number of times that the fiber can be used. For example, a common problem of recycled paper is the inability for ink to bond to the surface of the paper. Other technical barriers are also present in recycled paper

Simpson Paper Company currently employs approximately 1,000 people in California, and about 4,500 people nationwide.

Company name:	**SPECIALTY PAPERBOARD, INC.**
Address:	Burdies Rd., P.O. Box 448, Brattleboro, VT 05302
Contact person and job title:	Brenda M. Quinn, Manager of Corporate Communications
Date business started:	1989
Recycled Feedstock:	Paper
End Product:	Office product material and book cover material

Paper to Pressboard

In 1989, Specialty Paperboard broke ties with parent company Boise Cascade. Today, they are the nation's leading producer of heavyweight pressboard. Genuine Pressboard™ and Press-Guard®, a treated and embossed version of Genuine Pressboard™ , are the leading products being produced by Specialty Paperboard. These account for 30% of all pressboard they produce. The feedstock consumed by Specialty Paperboard comes from a vast array of sources ranging from post-consumer paper to scrap wood pulp. Specialty Paperboard uses recycled paper in most of their office products line, in amounts varying from 25% to 100%.

Specialty Paper markets their products in countries such as Asia, Australia, New Zealand Canada, Mexico, South America and Europe. Their corporate headquarters and Pressboard Products Division are located in Brattleboro, Vermont, where both are housed in a 200,000 square foot building on 39 acres.

Specialty Paperboard's employees pride themselves on their research and development abilities on new and innovative items. The pressboard manufactured by

Specialty Paperboard is produced using a patented process that provides a densified end product that is stronger, and more rigid and durable that other competitive products. The pressboard comes in a variety of colors and surface finishes to enhance both the look and the durability of the end product.

The company utilizes two paper mills, one located in New York and one in Vermont, to manufacture their office products line. The paper machine in Vermont produces approximately 110 tons per day. The company plans to complete an upgrade of its Brattleboro, Vermont, paper machine in September 1995. Following the installation of the new equipment, daily capacity at Brattleboro is expected to increase to approximately 130 tons per day. The upgrade will also increase the machine's use of recycled fiber and will improve their paper-making efficiency. As the use of recycled products continues to rise, the Brattleboro upgrade helps Specialty Paperboard satisfy their ever-increasing consumer demand.

A forerunner in recycling technology, Specialty Paperboard's products contained recycled materials long before recycling became a national priority. Government agencies and environmentally-conscious consumers continually update their standards for recycled content. Specialty Paperboard's products are designed to meet, and often surpass, these requirements.

Company name:	**THERMO-KOOL OF ALASKA, INC.**
Address:	6348 Quinhagak, Anchorage, Alaska 99507
Contact person and job title:	Tom Davis, General Manager
Date business started:	1977
Recycled Feedstock:	Newspaper
End Product:	Insulation

Newspapers Can Keep You Warm

In 1977, Tom Davis saw that there was a shortage of insulation throughout the United States. He also realized there was a need for newspaper recycling in Anchorage, Alaska. Given Davis' previous experience in insulation manufacturing and the need for recycling in Anchorage, he decided to salvage the discarded newspapers and make insulation out of them. Thus, Thermo-Kool of Alaska Inc. was born.

Thermo-Kool uses approximately 3,000 tons of old newspapers per year to manufacture insulation. This is done in a three step process. In the first step, all the cardboard, plastic and staples are removed from the material to be recycled. At present, the plastic is sent to a landfill, but the cardboard is sent to another recycling facility. The second step is the grinding stage. Thermo-Kool takes the newspaper through two large grinding stations. The ground paper is then sent into the last stage, where a baling machine is used to place the ground paper into plastic bags.

The Thermo-Kool facility is located in Anchorage, Alaska and employs eight individuals for all three stages of the recycling process. The process does not need

specialty personnel to perform the tasks. Thermo-Kool utilizes approximately 6250 square feet for the recycling process. Because the process of recycling the newspapers is not hazardous, they were not required to get any special building or operation permits.

As of now, Thermo Kool is not planning to expand their operation or facility. At this time, they are of an adequate size to serve their market. Their presence in the insulation industry is quite unique. Not only do they manufacture a product that is readily purchased by consumers, but they also utilize environmentally friendly methods in the manufacturing process. Tom Davis is an entrepreneur who saw a need and filled it while keeping the recycling needs of his community in mind.

Section 7

PETROLEUM

Company name:	**SAFETY-KLEEN CORP.**
Address:	7001 W. 62nd, Chicago, IL 60638
Contact person and job title:	Dave Dattilo, Senior VP, Sales and Service
Date business started:	1968
Recycled Feedstock:	Automotive and industrial waste fluids
End Product:	Re-refined fluids

Re-refining is so Fine

When Safety-Kleen first started in 1968, they had only 400 local customers in the Milwaukee area. Today, Safety-Kleen has over 500,000 customers world-wide and is reclaiming just over 200 million gallons of waste fluids a year. In 1970, Safety-Kleen opened its first recycling center where they recycled used parts cleaner solvent into a re-usable solvent. Within five years of opening the first center, they had opened four additional recycling centers.

One of Safety Kleen's unique developments is its closed-loop system of distribution. This involves manufacturing and distributing the solvent to their customers. The customer uses the solvent, then Safety-Kleen retrieves the used solvent from the customer. The retrieved solvent is re-refined back into usable solvent and again used by the customer. This closed loop system allows Safety-Kleen to maintain better control over how much solvent is being used by the customer.

Since passage of the Resource Conservation and Recovery Act (RCRA) in 1984, regulations regarding waste material and the handling of that material have become more stringent. Companies producing waste material are required to comply with regulations

to avoid serious fines. This turned out to be a great opportunity for Safety-Kleen, as they began developing recycling programs and services to help companies deal with the new regulation. In the past 25 years Safety-Kleen has invested thousands of dollars into recycling , training programs, reclamation and re-refining technologies to help both Safety-Kleen, and their customers, better understand the need to recycle .

One of the company's new product designs is the Cyclonic Parts Cleaner. This particular cleaner is unique in that it mechanically separates the solid material from the solvents, using a patented process. This keeps the solvent cleaner for a longer period, allowing for true waste minimization. In some cases, this reduction in waste can place a company in a less-regulated waste management category.

Currently, one of the fastest growing areas for Safety-Kleen is the Industrial Services Division. In 1987, the company introduced Fluid Recovery Service (FRS). This service was aimed at companies that produce small quantities of hazardous waste. Most of this waste is burned in high BTU furnaces where it can be safely reclaimed.

Safety-Kleen focuses on serving their customers, who have a growing concern regarding the environment. In 1991, Safety-Kleen established a program called WE CARE ® that is geared toward educating people about the values of waste management. In addition, the company has recently formed an alliance with NASCAR to promote waste recycling in the racing industry and to encourage everyone to recycle.

Section 8

PLASTICS

Company name:	**ARW POLYWOOD, INC.**
Address:	PO Box 277, Lima, OH 45802
Contact person and job title:	Adam Wright, General Manager
Date business started:	1989
Recycled Feedstock:	PET, HDPE, PVC, LDPE, Polypropylene, Polystyrene, Other
End Product:	Dimensional lumber

Pop Bottles to 2 x 4's

In 1987, before starting ARW Polywood, Adam Wright ran a medium sized recycling facility in Lima, Ohio. His facility processed recycled plastic for resale to manufacturers that use plastic as a raw material. Wright ran into problems, however, when the price of plastic dropped from 34 cents/lb. to only 4 cents/lb. This prompted Wright to look into other options. In 1989, he decided to consume some of the plastic by starting an extrusion facility to manufacture plastic into dimensional lumber to complement his recycling business. Thus, ARW Polywood began operations and extruded plastic lumber started to roll off its assembly line. For the past six years, ARW Polywood has been extruding dimensional lumber in any size or shape imaginable.

The plastic that ARW Polywood consumes is both post-industrial and post-consumer. They receive their plastic in many different forms, including pre-granulated and densified. In addition, they are capable of grinding and densifying materials in-house. The plastic is then washed and dried before it goes to the extruders. Once there, the plastic is heated and melted as it is pushed through a die. The die determines the final

shape of the lumber, and any shape can be made. The length of the lumber varies depending on the customers' needs.

One of the unique qualities of plastic lumber is that different additives can be added to the flaked product to help increase its physical properties, such as fire and UV resistance. This creates a product that will, in many cases, never fail in a human life span. It can also be used in special situations where wood lumber would not be as useful. For example, ARW Polywood makes pier piling by extruding the plastic around a fiberglass core. These pilings are used in areas that are typically exposed to highly corrosive environments.

Today, as more and more people are consuming recycled materials (especially plastics), the supply of inexpensive feedstock is becoming a serious issue. Mr. Wright said that the price of recycled plastics (polyethylene and polypropylene) is increasing and at some point it may become infeasible to use to make a lumber product.

Company name:	**CALIFORNIA PLASTICS RENEWAL/ AVON PLASTIC, INC.**
Address:	8451 Rovana Circle, Suite 200, Sacramento, CA 95828
Contact person and job title:	Don Reum
Date business started:	1967 as Avon Plastics, 1994-Ca. Plastics Renewal
Recycled Feedstock:	Plastic resins
End Product:	Landscaping products

Plastic Bottles to Plastic Landscape Edging

Increasingly, landscaping products are being made from recycled plastics. California Plastics Renewal, Inc. and its sister company Avon Plastics, Inc. of Minnesota, have been making landscaping products for many years. The company's initial goal was to use 70-100% post consumer plastic resins in extruded landscape edging. The idea was to see how recycled resins could be introduced into the company's existing product line. Implementing the use of recycled plastics required testing different blends of resins and trying different colorings to obtain a high quality product with a consistent color. The research found that landscape edging, which the company makes in black and redwood, ideal for recycled plastic products, because the dark color of the recycled plastic mixture can be further colored into the edging.

To control the quality of the recycled resins, California Plastics Renewal has developed a vertically integrated structure. They are involved in every step, from processing the recycled bottles into the feedstock to extruding the landscape edging. The

process begins with the sorting of plastic containers and the removal of any metal, wood, glass or caps from the base plastic. The plastic is then shredded before cleaning. The cleaning process has several stages from a slow cycle soak and gentle agitation to remove labels, to a high intensity wash and rinsing. The cleaning process uses heavy duty soap instead of chemicals. All of the wash and rinse waters are filtered and reused so that no water is discharged into the sewer. After the plastic is washed, it is dried and then pelletized for use in the extrusion of landscape edging or as raw material for other manufacturers. Extruding is the final step in making plastic landscaping edging.

California Plastics Renewal is gearing up to recycle 38 million pounds of recycled plastic bottles per year. Don Reum feels that California Plastics Renewal is a very good fit for the California and west coast market as the 25% plastic content law comes to effect. He also said that education about the collection and use of plastics for the consumer is critical to the success of plastic recycling.

Company name:	**HAMMER'S PLASTIC RECYCLING CORP.**
Address:	10252 Hwy. 65, Iowa Falls, Iowa 50126-8823
Contact person and job title:	Ken Iles, Executive VP Sales and Marketing
Date business started:	1987
Recycled Feedstock:	PET, HDPE, LDPE
End product:	Park benches, picnic tables, speed bumps, pallets, wheel chocks and marine systems

Pop Bottles to Picnic Tables

In 1987, Hammer's Plastic Recycling Corporation started manufacturing plastic molded parts in their 30,000 square foot facility in Iowa Falls, Iowa. Today, the company has expanded to extruded plastic lumber in its new 80,000 square foot facility in Maryland. The Maryland facility produces plastic lumber/pallets that are used throughout the world.

Hammer's can use both post industrial and post consumer plastics. They receive plastics (PET, HDPE and LDPE) from either a MRF or broker who deals in plastic feedstock. Once the material is received in-house, the plastic is cleaned and, if necessary, ground by a cumberland grinder before being injected into a mold that will determine the geometric shape of the part. According to Ken Iles, Hammer's has the ability to produce shapes from 2" x 2" to 10" X 10". In the new Maryland factory, the plastic is continually extruded into a base shape determined by the die. The plastic is then cooled and cut to lengths to make pallets and other lumber products.

When dealing with a vast array of plastics, it can be difficult to prevent the wrong plastic resins from entering the mix. If this occurs an inferior product, and damage to the equipment can result. Therefore, Hammer's has worked hard to ensure that only the best materials are received at their facility so total quality control is maintained.

Hammer's presently employs approximately 50 workers to handle their 100,000 pounds per week of recycled material. The company foresees many future opportunities in this diverse field of recycling and plans for more expansion into other areas of plastic products and locations.

Company name:	**INTERNATIONAL PLASTICS CORP.**
Address:	301 E. Vine St., Suite B, Lexington, KY 40502
Contact person and job title:	Tom Click, Sales and Computer Tech Support
Date business started:	1985
Recycled Feedstock:	PET, HDPE, LDPE & PC/ABS
End Product:	Concrete accessories, road signs & dimensional lumber

Road Signs to Rebar

In 1985, International Plastics Corporation (IPC) began manufacturing concrete rebar supports using a proprietary blend of recycled plastics. Today, IPC has expanded production to include products made from a variety of recycled plastics: PET, High Density and Low Density Polyethylene, ABS, Polycarbonate and Polypropylene. IPC products address a wide range of needs particular to the industrial and construction markets, including concrete accessories, dimensional lumber, signage, traffic control, trailer liners, and office products.

According to Tom Click, concrete accessories are the company's largest business market. IPC manufactures injection-molded slab bolster and x-chairs out of a proprietary recycled plastic blend. These items support the steel bar imbedded in steel-reinforced concrete and require a high degree of accuracy and strength. By using plastic, IPC's supports are dimensionally exact and are not prone to the deformation prevalent in metal substitutes. In addition, the engineered design of IPC's products, combined with the superior properties of plastic, provides a significant strength advantage. Independent

testing has established IPC's recycled plastic products to be from 54% to 269% stronger than traditional metal supports.

HDPE and LDPE are used to manufacture plastic lumber. IPC uses a combination extrusion/compression molding process to manufacture this product. The compression molding imposes a uniform and stable dimension and increases the density of the lumber. The uses for plastic lumber range from consumer applications to harsh environment applications and may be cut, etc., using common tools. There is no fear of deterioration, rot, mold or any other wood-related problems. Fences, outdoor docks, boat docks and boardwalks are a few examples of how these products are used.

Polycarbonate, ABS, and Polypropylene are all used in IPC's sign products. The signs start as sheets and are cut into the desired geometric shape. The actual sign face (STOP, YIELD, etc.), also plastic, is then bonded to one or both sides of the sign. The end result is a sign which is extremely durable and deters theft (aluminum signs yield high recycling value).

International Plastics plans to expand and develop its present product line in areas addressing increased consumer involvement. A recent addition to the IPC family of products are office products (notebooks, binders) made from recycled PET, instead of vinyl. Each binder is estimated to contain the plastic from eight household recycling containers, taken directly from public recycling programs.

According to Click, "The goal of International Plastics is to be truly innovative in our areas of expertise: plastic and its uses. The amount of post-consumer and industrial

plastics available in our country is immense, and most of it is just sitting in landfills. It is only logical that we begin to treat existing plastic as a 'natural' resource. The low-cost and ease of use, combined with a score of other benefits, makes recycled plastic extremely attractive for both business and environmental concerns."

Company name:	**MARTIN COLOR-FI, INC.**
Address:	510 Augusta Rd., Edgefield, SC 29824
Contact person and job title:	Martha Roland, Public relations
Date business started:	1978
Recycled Feedstock:	PET
End Product:	Fibers, yarns, carpet, pigments, and additives

Closing the Recycling Loop

A company by the name of Martin Fibers, Inc. was founded in 1978. Six years later, under the name of Martin Color-Fi, Inc., they began manufacturing plastic fiber to be used in paint rollers, commercial and automotive carpets, home furnishings, scrub pads, air filters and construction reinforcements. Martin Color-Fi currently consists of four divisions: Fibers and Recycling, Yarns, Carpet, and Pigments and Additives.

Martin Color-Fi recycles waste plastics, such as post-consumer beverage bottles, pre-consumer plastic film waste and extrusion waste. Martin Color-Fi takes these plastics and reprocesses them into a form that can be washed and cleaned before being blended. Once blended, they're extruded by Martin Color-Fi to manufacture polyester fibers. Most fiber manufacturers produce fibers and then dye them. This procedure often releases quantities of harmful chemicals into the environment. Martin Color-Fi has eliminated this conventional dyeing process and, instead, uses a process called "solution dyeing." Here, the pigment is added to the molten polymer and is extruded as an integral part of

the fiber. This process also makes the fiber much more colorfast and substantially reduces the amount of waste material produced during the dyeing process.

Last year alone, Martin Color-Fi used over 100,000 tons of recycled material. According to Martha Roland, they are seeing a slight trend toward difficulty in obtaining raw materials. She also states, however, that the latest statistics show that there are 2.5 million plastic containers used every hour in this country. Given these numbers, an adequate supply of plastic waste should be around for quite some time.

Company name:	**PLASTICYCLE INDUSTRIES, INC.**
Address:	1500 Galloway St., Eau Claire, WI 64703
Contact person and job title:	Dave Bergstrom, Owner
Date business started:	1991
Recycled Feedstock:	N/A
End Product:	Plastic recycling system

Clean-it, Grind-it, Use-it

Four years ago, PlastiCycle Industries, Inc. recognized a need for a cost-effective plastic recycling system. While a number of systems were available, none met the needs of the typical recycler with limited budget and floor space. As a result, PlastiCycle has developed a low-cost plastic recycling system which meets the needs of the recycler and can be used by manufacturers wanting to supplement virgin resin with post-consumer and post-industrial waste.

The system was first introduced in 1991 for upgrading post consumer polystyrene. The first application used material from the Minnesota State Fair where 5 million polystyrene cups were diverted from landfill and converted into foam insulation. Depending on peripherals, subsequent development has demonstrated applicability to other rigid plastic, including PE, PVC, PP, PETE, and even paper milk containers.

The heart of the system is a 3 stage washer/dryer called the PlastiCycler. It was designed specifically for low density material and consists of 3 rotating drums to wash,

de-water and dry the material. Each drum is separated from the other by baffles to control residence time at each stage.

In typical applications, waste plastic is first ground to approximately 4 inch pieces. Labels liberated in the first stage of reduction are removed by air classification. Next, the shredded material flows into the PlastiCycle washer chamber. As waste plastic tumbles through the drum, it is sprayed with high volumes of heated wash water. All contaminates finer than the mesh size of the rotating screen are removed with the wash water. Washed materials then migrate to the second rotating drum where free moisture is removed. Next, the material enters a final drum where the remaining moisture is removed by hot air. After drying, cleaned material is granulated and air classified before entering a box filling station.

PlastiCycle offers bottle-to-flake turnkey systems or components that will interface with existing reduction or sorting systems. As an engineering organization, PlastiCycle considers design flexibility to be of primary importance.

Company name:	**PLASTIC PILINGS INC.**
Address:	8560 Vineyard, Suite 205, Rancho Cucamonga, CA 91730
Contact person and job title:	Sue McKenzie, Office Manager
Date business started:	1988
Recycled Feedstock:	HDPE & LDPE
End product:	Pier pilings

Milk Bottles to Pier Pilings

In 1988, Andrew Barmakian started a company to help reduce the influx of plastic waste to landfills. His idea to integrate recycled plastics (HDPE and LDPE, in particular) with round steel pipe led to the development of a corrosion-resistant and structurally stable piling composite used in the construction of boat docks, piers and wharves.

Plastic Pilings Inc. (PPI) uses two US built extruders to manufacture its end products. First, PPI receives the raw plastics from suppliers that deal in ground, chopped, densified, and pelletized recycled plastics. Because they have received contaminated plastics from their suppliers in the past, each lot of plastic received is now tested for contamination. Specifically, a burn test is performed on random samples of the plastic to verify that the plastic received has a melt index between 0.3 and 0.6 for HDPE and between 0.9 and 2.0 for LDPE. The waste material produced in the manufacturing process (up to 7%) is simply reground and placed back into the extruder to be used again. The final product is a 13 inch diameter plastic piling with a 6 inch diameter stainless steel pipe core of lengths up to 70 feet.

The 7,000 square foot facility operates without the requirements of special building or operational permits. The plant operates with about 20 employees managing the 750 tons of recycled material consumed each year by PPI. According to Sue McKenzie, one of PPI's managers, the operation will be expanded during the next two years.

Company name.	**RECYCLED PLASTICS INDUSTRIES INC.**
Address:	1820 Industrial Dr., Green Bay, WI 54302
Contact person and job title.	Betty Jandron, Operation Manager
Date business started .	1989
Recycled Feedstock:	HDPE
End Product:	Lumber

Plastic Lumber

Helping the environment, reducing landfill dumping, and working a business that is profitable can be more than just a challenge. In 1989, Recycled Plastics Industries (RPI) started manufacturing lumber using HDPE and now manufactures 26 different shapes (1/2" x 1 1/2" to 2"x 6", and even a 3"x 3" x 3/8" angle) and five different colors which include black, white, gray, weathered wood, and cedar.

The majority of plastic used by RPI is post-consumer. RPI buys mainly ground plastic in flake form, though sometimes RPI purchases bales and has them ground by an outside company, Environmental Recycling. According to Betty Jandron, Operation Manager, the material received is clean HDPE (milk containers), although it is not uncommon to see pieces of other types of plastics mixed in the bulk HDPE, and sometimes even paper. Ms. Jandron also mentioned that a certain amount of contamination is acceptable in the process and has no effect on the quality of the end product.

Recycled Plastics Industries extrudes all of its lumber using a continuous extruder process. One problem that other companies have experienced with forming dimensional lumber using this process is maintaining the shape of the end product. However, this is not a problem for RPI, according to Ms. Jandron. She says it's all in the cooling process as the material exits the die. If the material is not cooled correctly or handled properly, the lumber can bend, warp, bulge or concave.

RPI's 7,500 sq. ft. facility consumes 500 tons of HDPE per year, and currently employs 12 people. Recycled Plastics Industries is expanding into a new 20,000 square foot facility they have recently purchased in order to produce more end-products. In addition, the company is expanding its product line to better meet the needs of their customers.

Company name:	**RESIN MANAGEMENT CORPORATION**
Address:	6712 N. 54th St., Tampa, FL 33610
Contact person and job title:	Peter C. Blyth, Owner
Date business started:	1981
Recycled Feedstock:	All plastics
End Product:	Reprocessed resin

Managing Resins

In 1981, Peter C. Blyth started Resin Management Corp. (RMC) with the intent of recycling acrylic resins. This process involves "cracking" the resins in an operation that subjects the plastic to extreme heat which depolymerizes the plastic allowing the recovery of the monomer originally used to manufacture the plastic. During his involvement with this process, Mr. Blyth discovered that RMC was competing in a large chemical commodity market in which it was extremely difficult to make a profit. To remedy this, Blyth decided to resell some of the acrylic feedstock materials.

Once RMC became more involved with the reselling of acrylic feedstock, they found there were other types of commodity and engineering grade resins they could purchase and resell. Over the years, they expanded this business gradually, developing expertise in a wide range of plastic recycling areas. Today, it is possible to ship rail cars of scrap to RMC and receive in return reprocessed pellets that are certified to meet customer specifications.

By combining their technical ability and modern management technique, RMC has become an authority on recycling resins and can direct their suppliers and customers in the proper handling and usage of recycled plastics. Their supplier and customer base is both domestic and international.

RMC's approach is to analyze a company's waste generation problem and then suggest a recycling program. This can entail one or more of the following: (1) simple suggestions as to how to minimize scrap generation, (2) purchase and removal of all generated materials in an "as is" condition, (3) provide details on how to handle and/or process scrap to maximize value, (4) design and installation of scrap processing equipment. Typically RMC will take ownership of any materials being handled useless the supplier requests that they be returned for manufacturing purposes.

As the industry of recycled plastics and the problems associated with reusing resins continues to grow, Mr. Blyth feels that the days of ordinary plastic brokers (simple buying and selling of resins) will disappear. Only those companies with a solid technical base and extensive production capabilities will survive. The future belongs to those who understand quality control and customer service.

Company name:	**VANGUARD PLASTICS, INC.**
Address:	8950 Toronto Av., Rancho Cucamonga, CA 91730
Contact person and job title:	Robert Bailey, Production Manager
Date business started:	1987
Recycled Feedstock:	HDPE, LDPE
End Product:	Plastic grocery bags

Milk Bottles to Grocery Bags

Vanguard Plastics of Rancho Cucamonga, California, manufactures plastic grocery bags from recycled milk jug material and other recyclable materials obtained from a "clean" MRF. Public and customer demand for recycled grocery bags in the mid 80's is one of the main reasons Vanguard began operations.

Vanguard produces plastic grocery bags by blowing HDPE and LDPE into film for later conversion into bag form. Robert Bailey, Production Manager at Vanguard, sees no real advantage in using recycled material over virgin material in the manufacturing process. Public demand for environmentally friendly products and reduction of landfill utilization are the main reasons recycled material is being used. The recycled feedstock tends to be more costly due to the fact that it does not process as well as virgin material. Because the recycled material doesn't process as well, slightly more waste is generated than would be if virgin material were used. However, Vanguard does recycle this waste, putting it right back into the process.

Bailey sees future trends requiring the increased use of recycled materials in manufacturing, especially in the area of plastics. For Vanguard's application, the restriction on the increased use of recycled materials lies in the collection methods. For Vanguard to produce non-defective grocery bags, the material going into the process must be clean. For instance, a paper grocery receipt left in a plastic bag and not separated before going through the process may contaminate enough material to manufacture 20 recycled bags.

Currently, Vanguard employs nearly 100 people. Approximately 3,000 square feet of Vanguard's facility is used for the recycled manufacturing process where they use about 1.5 million pounds of recycled material per year. Vanguard's future includes plans to expand its operations. As the State Legislature mandates increases in the use of recycled materials, Bailey sees a need for improved technology for collecting and sorting materials. Bailey also mentioned that legislative mandates tend to create "artificial" demand for the recyclable materials, while not necessarily increasing the supply. An increase in demand with no corresponding increase in supply drives prices up.

With a history of success to build upon, Vanguard is well prepared to take advantage of the changing regulations and emerging technologies that will, at some point, revolutionize its industry.

Section 9

TEXTILES

Company name:	**WATSON PAPER COMPANY**
Address:	1719 Fifth St. NW, Albuquerque, NM 87102
Contact person and job title:	Stephan Watson, Owner
Date business started:	1979
Recycled Feedstock:	Cotton Denim
End Product:	Denim Paper

I Dream of Jeany

Watson Paper Company started 14 years ago as a maker of custom and handmade specialty paper. In recent years, they started turning recycled cotton denim into denim paper products such as sheets and envelopes. The source of the cotton denim is either manufacturing recycled material or post consumer material. The majority of the denim comes from manufacturers, with a small amount from post consumer. Stephan Watson stated that reducing dependence on landfills was one of the main reasons the company was involved with recycled material. Resource conservation was another reason for their involvement. According to Watson, it takes 1,000 acres of land to grow the amount of cotton that one jean manufacturing facility will throw out in a year.

At present, Watson Paper Company's New Mexico facility covers 25,000 square feet and operates on 2 acres of land. The denim arrives at the facility baled or in bulk form and is cleaned, sorted and pre-processed. Then, the denim is chopped and hydrated for processing. Due to the high cost of paper mill machinery, only one-fourth of the processing is done at their facility. The rest is processed at outside mills that specialize in cotton. Watson Paper Company currently uses two such mills, Crane & Co. and Cottrell.

The patent-pending process they use allows the denim to maintain its color integrity as it goes through the paper-making stage. Some customers, however, prefer white paper so bleach is added to some denim for this purpose. During the processing of the recycled cotton denim there is waste produced, some of which Watson Paper Company recycles again. The inclusion of nylon in the original denim, which is not usable in paper products, makes it impossible to recycle the waste 100 percent. Watson is trying to get the manufacturers of denim to stop using nylon and suggests they switch to rayon instead.

Watson feels that using recycled cotton denim has advantages over using virgin material because the denim is fifteen to twenty times stronger than the wood fiber traditionally used to make paper. Using 100% cotton paper also supports the cotton waste industry. Watson states that the major disadvantage of using recycled material is the cost. Problems such as: equipment, material, shipping, and special building and operational permits that Watson Paper Company is required to get because of their classification as a "waste handler" all contribute to higher costs.

Within the next two years, Watson Paper Company plans to expand their use of recycled materials and possibly their facility. Watson believes this growth can only occur however, with the aid of grants and/or loans. Watson believes that matching grants need to be available for recycling companies that are applying for loans, but don't meet the ratios for lending. Watson also feels that consumers should be given incentives for buying recycled products. Recycling costs are higher, and small recycling companies are working and competing against companies that are 100 to 1000 times larger and that use virgin material.

A new development for Watson Paper Company, according to Mr. Watson, is a pencil made out of denim. These pencils are currently being made by Empire Berol Corporation, (Denim-Pencils™) labeled Eagle Jeans.

Section 10

TIRES

Company name:	**ENVIRONMENTAL TIRE**
Address:	14144 Small Farm Drive, Igo, CA 96047
Contact person and job title:	Bob Ray, Owner
Date business started:	1990
Recycled Feedstock:	Tires
End Product:	Mats, tree ties, culverts and bedliners

Re-Tired!

Environmental Tire began in early 1990 after Bob Ray, co-owner of a landfill in Anderson, California, decided to recycle waste instead of burying it. Recent legislation had prohibited disposal of whole tires into landfills. Today, Ray recycles 1,500 tires per year by making products, such as door mats, swings, tree ties, floor treads, and culverts. These items are manufactured using a mobile tire shredder that was designed and constructed by Ray.

Mr. Ray receives the tires at his facility, where he sorts them between steel belted and bias tires. Sorting is done by running a magnet across each tire to identify those containing steel. The tires are then placed on a debeader to remove the beads on both sides of the tire. Bias tires are again sorted, removing the better tires to be used as swings for kids from the tires selected for other uses. If the tires are not selected for swings they go to the next step of the process. Mr. Ray cuts the side walls and treads into strips of three different lengths. The strips will then be sorted and used to make either nursery plant ties or rubber mats.

The company tries to recover as much material as possible from the tires. Only the side walls are recovered from the steel belted tires. In addition, all parts of bias tires are used except the side wall to tread transition. For example, the beads from both types of tires are bound together to make drainage culverts. The remaining rubber (side wall to tread transition and the tread on the steel tires) is placed in storage awaiting shipment to crumb rubber recyclers.

Environmental Tire markets its products at craft shows, fairs, and by word of mouth. The company's expansion plans include marketing unassembled tire products to sheltered workshops, opportunity centers, and small businesses which would assemble and then market the finished products.

Company name:	**MEGGISON ENTERPRISES INC.**
Address:	PO Box 1780, Arvada, CO 80001
Contact person and job title:	Chuck Crask, Sales Manager
Date business started:	1979
Recycled Feedstock:	Used tires
End Product:	Ashalt crack seal

Tires to Rubberized Asphalt Crack Seal

Strength and longevity are just two of the advantages of using ground tires as an additive to asphalt crack seal, according to Chuck Crask, Sales Manager for Meggison Enterprises, in Arvada, CO. According to Crask, Meggison obtains the rubber from commercial rubber grinders who supply ground rubber tires to the specifications required by Meggison. All the cords and metal used to make the tires are removed and rubber is ground to approximately 1000 microns (the size of a coarse pepper). The rubber is then blended with asphalt cement, heated, and poured in 30 lb. cubes and allowed to cool. The cubes are boxed, two cubes per box (total 60 lb.) and readied for shipping. Meggison does not use fillers, such as clays, to bulk the end product.

Last year Meggison consumed approximately 100,000 tires, which equates to about 400 tons of tire rubber. The company has a 30,000 square foot facility and 18 employees. There were no special building or operational permits required for Meggison to start up its facility in Colorado nor has the company received any government subsidies to aid in the operation.

Meggison ships its product nationwide, for use in road applications. One unique feature of this product is its ability to function and withstand a wide range of temperatures. According to Crask, the sealant used on roads can resist temperatures ranging from -10° to 120° F with lasting results.

Company name:	**SCIENTIFIC DEVELOPMENTS INC.**
Address:	PO Box 2522, Eugene, OR 97402
Contact person and job title:	Gordon Exe, Marketing Manager
Date business started:	1974
Recycled Feedstock:	Used tires
End Product:	Aircraft and truck wheel chocks, speed bumps, delineator bases and boat bumpers.

Not Tired of Tires

Recycling was in its infancy in 1974 when Scientific Development Inc. (SDI) of Eugene, Oregon dreamed of producing a product strictly from recycled tires. The company's process chops up tires and uses that material to mold various shaped products such as utility and aircraft wheel chocks, dock and trailer bumpers, speed bumps, delineator bases, and an assortment of custom products.

When SDI began, it received a local government subsidy of $1.00 per tire to assist with start-up costs. Now, the company receives no government assistance to operate its expanding business.

A unique feature of this company is that it starts with used tires in-house, versus purchasing rubber from a rubber supplier. The tires are chopped up in a grinder and run through a cracker miller, where the tires are chopped into small pieces. The final size of rubber varies, but is approximately the size of a BB or smaller (10 to 15 mesh). The rubber is then screened to separate the different sizes, magnets pull out the steel and a blower removes the fiber. The rubber is then ready for the molding process. Currently,

the metal and nylon (approximately 5% to 8% of the original tire) are not recycled, and must go to a landfill.

The operational facility is located on approximately 20 acres of land. The company employs about 20 people to manage the 50 tons of rubber that go through the facility each month. Due to the nature of this manufacturing facility, special building and operational permits were required by the state of Oregon, and the facility is closely monitored by the Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA).

In the future, Scientific Developments, Inc. is planning to expand its product line of delineator bases and other custom molded recycled rubber products.

Company name:	**THE MAT FACTORY**
Address:	12838 Jackson Road 168, Findlay, OH 45840
Contact person and job title:	Joe Kinn, Vice President
Date business started:	1989
Recycled Feedstock:	Tires
End Product:	Woven rubber mats

We Give Old Tires New Life

Joe Kinn and his wife, Katherine, started operations in their backyard in 1989. Joe claims, tongue-in-cheek, that they started the business to "put my wife back to work." The advantage of using tires to make woven rubber mats is that the Kinns can obtain used tires free and have had no problem getting enough tires to produce the number of mats demanded. A disadvantage of relying on recycled tires is that different tires contain a variety of rubber. Not all of the rubber types process the same. Also, the tire bead can't be processed in a way that would allow it to be included in the mat.

The Mat Factory gets its supply of used tires from curbside recycling operations. Approximately 1,500 tires a year are used to produce the mats and the operation utilizes slightly less than 1,500 square feet. At present, The Mat Factory only needs 2 employees to put the tires in tire cutters, a punch, and a banner. The punch punches holes in the tire strips that come from the cutter and the banner weaves these strips together. Currently, The Mat Factory sells the mats from the "factory" and has only occasionally used local retail outlets to help sell the mats.

The Mat Factory currently has no plans to expand or increase the scope of the product line to include other products made of recycled tires. However, a new name may be in the works for The Mat Factory. The Kinns are considering changing the name of their operation to Mat Fab, Inc.

Section 11

WOOD

Company name:	**LOUISIANA PACIFIC CORPORATION**
Address:	Feather River Boulevard. Oroville, CA 95965
Contact person and job title:	Bob Greer, Manager/Foreman
Date business started:	1973
Recycled Feedstock:	Wood chips, shavings, sawdust and other wood products
End Product:	Wood panel products, cabinets, doors and similar products

Not Just Sawdust Anymore

Louisiana Pacific Company (LP) has been involved in the re-use of wood products such as shavings, chips, and sawdust long before the environmental "push" began making recycling more popular. Upper management at LP foresaw escalating costs associated with whole log operations and began looking for alternatives to this method. Unlike other areas of recycling, wood recycling does not have a "curb-side" program by which processors can obtain materials. Currently only about 5% to 10% of the recycled material LP uses is post-consumer. The majority of the recycled material Louisiana Pacific uses is post-industrial recycled material or processed wood products for recycling purposes.

Using recycled material provides the advantages of cost savings and the saving of trees that may otherwise be cut to provide the needed material. However, disadvantages do exist as with other recycling processes. One disadvantage mentioned by Bob Greer, Manager/Foreman at LP's Oroville, California facility, is the fact that being involved in

re-using wood materials forces the operation to utilize materials that are *available* rather than those that may be more ideal.

Louisiana Pacific's Oroville facility processes about 1 million tons of recycled material per day to manufacture wood panel products, cabinets, doors, and similar products. The Oroville plant was specifically designed to utilize recycled material and employs about 160 people. Louisiana Pacific's customers are aware that the company is manufacturing products containing recycled material and this fact tends to create a favorable impression of Louisiana Pacific.

Louisiana Pacific's future plans concerning the use of recycled material will likely result in the expansion of the facility and most definitely result in the increased use of recycled products and materials. Bob Greer sees a future in the utilization of more "urban waste." Urban waste refers to items such as wood pallets and other wood products that would typically be landfilled. Already Louisiana Pacific is using approximately 10% urban waste and has found that it works well and presents relatively few problems. Another trend Greer sees developing is the increased processing of waste paper. Considerable experimenting regarding processing technology and techniques currently exists for the usage of waste paper. Louisiana Pacific's concerns center around adapting the processing of waste paper material to the company's specific purpose.

Appendix A

RECYCLING ASSOCIATIONS

NATIONAL RECYCLING ASSOCIATIONS

Aluminum Association
900 19th Street, N.W., Suite 300
Washington, DC 20006
Phone: (202) 862-5100
Fax: (202) 862-5164

Aluminum Recycling Association
1000 16th Street, N.W., Suite 603
Washington, DC 20036
Phone: (202) 785-0951
Fax: (202) 785-0210

American Forest & Paper Association
1111 19th Street, N.W.
Washington, DC 20036
Phone: (800) 878-8878
Fax: (202) 463-2785

American Foundrymen's Society
505 State Street
Des Plaines, IL 60016
Phone: (708) 824-0181
Fax: (708) 824-7848

American Iron and Steel Institute
1133 15th Street, N.W., Suite 300
Washington, DC 20005
Phone: (202) 452-7100
Fax: (202) 463-6573

American Legislative Exchange Council
214 Massachusetts Avenue, N.E.
Washington, DC 20002
Phone: (202) 547-4646
Fax: (202) 547-8142

American Petroleum Institute
1220 L Street, N.W.
Washington, DC 20005
Phone: (202) 682-8543

American Plastics Council
1275 K Street, N.W., Suite 400
Washington, DC 20005
Phone: (202) 371-5319
Fax: (202) 371-5679

American Public Works Association
Institute for Solid Waste
106 West 11th Street, Suite 1800
Kansas City, MO 64105-1806
Phone: (816) 472-6100
Fax: (816) 472-1610

American Retreaders' Association
P.O. Box 37203
Louisville, KY 40233
Phone: (502) 968-8900
Fax: (502) 964-7859

Appliance Recycling Information Center
701 Pennsylvania Avenue, N.W., Suite 900
Washington,DC 20004
Phone: (202) 434-7492
Fax: (202) 434-7400

Aseptic Packaging Council
1000 Potomac Street, N.W., Suite 401
Washington, DC 20007
Phone: (202) 333-5900
Fax: (202) 333-5987

Asphalt Recycling and Reclaiming Association
3 Church Circle, Suite 250
Annapolis, MD 21401
Phone: (410) 267-0023

Association of Container Reconditioners
8401 Corporate Drive, Suite 425
Landover, MD 20785-2224
Phone: (301) 577-3786
Fax: (301) 577-6476

Association of Foam Packaging Recyclers
1025 Connecticut Avenue, N.W., Suite 515
Washington, DC 20036
Phone: (202) 822-6424
Fax: (202) 331-0538

Association of Petroleum Re-refiners
P.O. Box 605, Ellicott Station
Buffalo, NY 14205-0605
Phone: (716) 855-2757
Fax: (716) 855-0339

Association of Post Consumer Plastic Recyclers
285 Central Street, Suite 201
Leominster, MA 01453
Phone: (508) 840-2692
Fax: (508) 537-8514

Association of State and Territorial Solid Waste Management Officials
444 North Capitol Street, N.W., Suite 388
Washington, DC 20001
Phone: (202) 624-5828
Fax: (202) 624-7875

3975 Fair Ridge Drive, Suite 20
Fairfax, VA 22033-2906
Phone: (703) 385-1001
Fax: (703) 385-1494

Battery Council International
401 N. Michigan Avenue
Chicago, IL 60611
Phone: (312) 644-6610
Fax: (312) 321-6869

Can Manufacturers Institute
1625 Massachusetts Avenue, N.W.
Washington, DC 20036
Phone: (202) 232-4677
Fax: (202) 232-5756

Cellulose Insulation Manufacturers Association
136 South Keowee Street
Dayton, OH 45402
Phone: (513) 222-2462
Fax: (513) 222-5794

Center for Packaging Research and Plastics Recycling
Rutgers University, Building 3529
P.O. Box 1179
Piscataway, NJ 08855-1179
Phone: (908) 932-3679
Fax: (908) 932-5636

Coalition of Northeastern Governors
400 North Capitol Street, N.W.
Washington, DC 20001
Phone: (202) 624-8450
Fax: (202) 624-8463

Composting Council
114 South Pitt Street
Alexandria, VA 22314
Phone: (703) 739-2401
Fax: (703) 739-2407

Container Recycling Institute
1400 16th Street, N.W., Suite 250
Washington, DC 20036-2266
Phone: (202) 797-6831
Fax: (202) 797-5411

Cooperative Marketing Network
1885 University Avenue West, Suite 315
St. Paul, MN 55104
Phone: (612) 645-6159
Fax: (612) 645-1262

Corporation on Resource Recovery and the Environment
601 Pennsylvania Avenue, N.W., Suite 900
Washington, DC 20004
Phone: (202) 434-8208
Fax: (202) 639-8238

Council for International Disaster Debris Mgmt.
4568 Kuli Road
Kalaheo, HI 96741
Phone: (808) 332-7379
Fax: (808) 332-7522

P.O. Box 11910
Lexington, KY 40578-1910
Phone: (606) 231-1939
Fax: (606) 231-1858

Council on Packaging in the Environment
1001 Connecticut Avenue, N.W., Suite 401
Washington, DC 20036
Phone: (202) 331-0099
Fax: (202) 466-5447

Council on Paper Waste Stream Management
c/o Risser & Associates
521 5th Avenue, Suite 1802
New York, NY 10175
Phone: (212) 953-1850
Fax: (212) 953-1775

Council for Textile Recycling
7910 Woodmont Avenue, Suite 1212
Bethesda, MD 20814
Phone: (301) 656-1077
Fax: (301) 656-1079

Fibre Box Association
2850 Golf Road
Rolling Meadows, IL 60068
Phone: (708) 364-9600
Fax: (708) 364-9639

The Filter Hotline
Carol Meyer
P.O. Box 13966
Research Triangle Park, NC 27709-3966
Phone: (800) 993-4583
Fax: (919) 549-4824

Flexible Packaging Association
1090 Vermont Avenue, N.W., Suite 500
Washington, DC 20005-4690
Phone: (202) 842-3880
Fax: (202) 842-3841

Food Marketing Institute
800 Connecticut Avenue, N.W., Suite 500
Washington, DC 20006
Phone: (202) 452-8444

Glass Packaging Institute
1627 K Street, N.W., Suite 800
Washington, DC 20006
Phone: (202) 887-4850
Fax: (202) 785-5377

Grocery Manufacturers of America
1010 Wisconsin Avenue, N.W., Suite 800
Washington, DC 20007
Phone: (202) 337-9400
Fax: (202) 337-4508

Hazardous Waste Management Association
4301 Connecticut Avenue, N.W., Suite 300
Washington, DC 20008
Phone: (202) 244-4700
Fax: (202) 966-4818

Institute of Packaging Professionals
Reston International Center
11800 Sunrise Valley Drive, Suite 212
Reston, VA 22091
Phone: (703) 318-8970
Fax: (703) 318-0310

Institute of Scrap Recycling Industries
1325 G Street, N.W., Suite 1000
Washington, DC 20005-3104
Phone: (202) 737-1770
Fax: (202) 626-0900

Integrated Waste Services Association
1133 21st Street, N.W., Suite 205
Washington, DC 20036
Phone: (202) 467-6240
Fax: (202) 467-6225

International Association of Pallet Recyclers
P.O. Box 481
Memphis, TN 38101-0481
Phone: (901) 523-7887
Fax: (901) 523-8353

International Cartridge Recycling Association
1101 Connecticut Avenue, N.W., Suite 700
Washington, DC 20036
Phone: (202) 857-1154
Fax: (202) 223-4579

International City/County Management Association
777 North Capitol Street, N.E., Suite 500
Washington, DC 20002-4201
Phone: (202) 962-3596
Fax: (202) 962-3500

Investment Recovery Association
30200 Detroit Road
Cleveland, OH 44145-1967
Phone: (216) 899-0010
Fax: (216) 842-1404

Keep America Beautiful
9 West Broad Street
Stamford, CT 06902
Phone: (203) 323-8987

Lead Industries Association
292 Madison Avenue
New York, NY 10017
Phone: (212) 578-4750
Fax: (212) 684-7714

NMTBA — The Association for Manufacturing Technology
7901 Westpark Drive
McLean, VA 22102-4269
Phone: (703) 893-2900
Fax: (703) 893-1151

National Alliance of Women in Waste
c/o Gaea Enterprises, Inc.
12404 Hall Shop Road
Fulton, MD 20759
Phone: (301) 854-3286
Fax: (301) 854-3287

National Association of Chemical Recyclers
1875 Connecticut Avenue, N.W., Suite 1200
Washington, DC 20009-5728
Phone: (202) 986-8150
Fax: (202) 986-8102

National Association of Counties
440 First Street, N.W.
Washington, DC 20001
Phone: (202) 393-6226
Fax: (202) 393-2630 or (202) 737-0480

National Association of Diaper Services
2017 Walnut Street
Philadelphia, PA 19103
Phone: (215) 569-3650
Fax: (215) 569-1410

National Association for Plastic Container Recovery
100 N. Tryon Street, Suite 3770
Charlotte, NC 28202
Phone: (704) 358-8882
Fax: (704) 358-8769

National Association of Towns and Townships
1522 K Street, N.W., Suite 730
Washington, DC 20005
Phone: (202) 737-5200
Fax: (202) 289-7996

National Food Processors Association
1401 New York Avenue, N.W., Suite 400
Washington, DC 20005
Phone: (202) 639-5900
Fax: (202) 637-8068

National Governors' Association
444 North Capitol Street, N.W.
Washington, DC 20001-1572
Phone: (202) 624-5300
Fax: (202) 624-5313

National Institute of Governmental Purchasing
11800 Sunrise Valley Drive
Reston, VA 22091
Phone: (703) 715-9400
Fax: (703) 715-9897

National League of Cities
1301 Pennsylvania Avenue, N.W.
Washington, DC 20004
Phone: (202) 626-3000
Fax: (202) 626-3043

National Office Paper Recycling Project
U.S. Conference of Mayors
1620 Eye Street, N.W., 4th Floor
Washington, DC 20006
Phone: (202) 223-3088
Fax: (202) 429-0422

National Oil Recyclers Association
12429 Cedar Road, Suite 26
Cleveland, OH 44106
Phone: (216) 791-7316
Fax: (216) 791-6047

National Petroleum Refiners Association
1899 L Street, N.W., Suite 1000
Washington, DC 20036
Phone: (202) 457-0480
Fax: (202) 457-0486

National Recycling Coalition
1101 30th Street, N.W., Suite 305
Washington, DC 20007
Phone: (202) 625-6406
Fax: (202) 625-6409

National Renderers Association
801 N. Fairfax Street, Suite 207
Alexandria, VA 22314
Phone: (703) 683-0155
Fax: (703) 683-2626

National Restaurant Association
1200 17th Street, N.W., 8th Floor
Washington, DC 20036
Phone: (202) 331-5913

National Soft Drink Association
1101 16th Street, N.W.
Washington, DC 20036
Phone: (202) 463-6732
Fax: (202) 463-8172

National Solid Wastes Management Association
4301 Connecticut Avenue, N.W., Suite 300
Washington, DC 20008
Phone: (202) 244-4700
Fax: (202) 966-4818

National Tire Dealers and Retreaders Association
1250 Eye Street, N.W., Suite 400
Washington, DC 20005
Phone: (202) 789-2300
Fax: (202) 682-3999

National Wooden Pallet & Container Association
1800 N. Kensit Street, Suite 911
Arlington, VA 22209-2104
Phone: (703) 527-7667
Fax: (703) 527-7717

Newspaper Association of America
11600 Sunrise Valley Drive
Reston, VA 22091-1412
Phone: (703) 648-1000
Fax: (703) 620-4557

North American Hazardous Materials Management Association
15 Barre St.
Montpelier, VT 05602
Phone: (802) 223-9000
Fax: (802) 223-0269

PSI Chapter
c/o ISRI
1325 G Street, N.W., Suite 1000
Washington, DC 20005
Phone: (202) 737-1770
Fax: (202) 626-0900

Packaging Research Foundation
Wayne Pearson
P.O. Box 189
Kennett Square, PA 19348
Phone: (610) 444-0659
Fax: (610) 444-0925

Paperboard Packaging Council
888 17th Street, N.W.
Washington, DC 20006
Phone: (202) 289-4100
Fax: (202) 289-4243

Plastic Bag Association
355 Lexington Avenue
New York, NY 10017
Phone: (212) 661-4261

Plastic Bag Information Clearinghouse
1817 E. Carson Street
Pittsburgh, PA 15203
Phone: (800) 438-5856
Fax: (412) 381-8890

Plastic Loosefill Council
c/o Free Flow Packaging
1093 Charter Street
Redwood City, CA 94063
Phone: (415) 364-1145
Fax: (415) 361-1713

Plastic Lumber Trade Association
c/o Plastic Lumber Co.
520 S. Main Street, Suite 2446
Akron, OH 44311-1010
Phone: (800) 886-8990; (216) 762-8989
Fax: (216) 762-1613

Plastics Institute of America
277 Fairfield Road, Suite 100
Stevens Institute of Technology
Hoboken, NJ 07004
Phone: (201) 808-5950
Fax: (201) 808-5953

Polystyrene Packaging Council
1025 Connecticut Avenue, N.W., Suite 515
Washington, DC 20036
Phone: (202) 822-6424
Fax: (202) 331-0538

Polyurethanes Recycle and Recovery Council
355 Lexington Avenue
New York, NY 10017
Phone: (212) 351-5422
Fax: (212) 697-0409

Portable Rechargeable Battery Association
1000 Parkwood Circle, Suite 430
Atlanta, GA 30339
Phone: (404) 612-8826
Fax: (404) 612-8841

Rubber Manufacturers Association
1400 K Street, N.W., Suite 900
Washington, DC 20005
Phone: (202) 682-4800
Fax: (202) 682-4854

Rubber Pavements Association
312 Massachusetts Avenue, N.E.
Washington, DC 20002
Phone: (202) 544-7111
Fax: (202) 544-7146

Scrap Tire Management Council
1400 K Street, N.W., Suite 900
Washington, DC 20005
Phone: (202) 408-7781
Fax: (202) 682-4854

Secondary Materials & Recycled Textiles Association
7910 Woodmont Avenue, Suite 1212
Bethesda, MD 20814
Phone: (301) 656-1077
Fax: (301) 656-1079

Society of Plastics Engineers
14 Fairfield Drive
Brookfield Center, CT 06804-0403
Phone: (203) 775-0471
Fax: (203) 775-8490

Society of the Plastics Industry
1275 K Street, N.W., Suite 400
Washington, DC 20005
Phone: (202) 371-5200
Fax: (202) 371-1022

Solid Waste Association of North America
P.O. Box 7219
Silver Spring, MD 20910-7219
Phone: (301) 585-2898
Fax: (301) 589-7068

Steel Recycling Institute
680 Andersen Drive
Pittsburgh, PA 15220
Phone: (800) 876-7274; (412) 922-2772
Fax: (412) 922-3213

Technical Association of the Pulp and Paper Industry
P.O. Box 105113
Atlanta, GA 31348
Phone: (404) 446-1400
Fax: (404) 446-6947

Tin Information Center of North America
1353 Perry Street
Columbus, OH 43201
Phone: (614) 424-6200
Fax: (614) 424-6924

Tire Retread Information Bureau
900 Weldon Grove
Pacific Grove, CA 93950
Phone: (408) 372-1917
Fax: (408) 372-9210

U.S. Chamber of Commerce
1615 H Street, N.W.
Washington, DC 20062
Phone: (202) 463-5331
Fax: (202) 887-3445

U.S. Conference of Mayors
1620 Eye Street, N.W., 4th Floor
Washington, DC 20006
Phone: (202) 293-7330
Fax: (202) 293-2352

Vehicle Recycling Partnership
General Motors Corp. Environmental and Energy Staff
30500 Mound Road
Box 9055
Warren, MI 48090-9055
Phone: (313) 947-1852
Fax: (313) 947-1422

Vinyl Environmental Resource Center
One Cascade Plaza, 19th Floor
Akron, OH 44308
Phone: (800) 969-8469

Vinyl Institute
65 Madison Avenue
Morristown, NJ 07960
Phone: (800) 969-8469; (201) 898-6699
Fax: (201) 898-6633

Waste Equipment Technology Association
4301 Connecticut Avenue, N.W., Suite 300
Washington, DC 20008
Phone: (202) 244-4700
Fax: (202) 966-4818

Yellow Pages Publishers Association
820 Kirts Boulevard, Suite 10
Troy, MI 48084
Phone: (810) 244-6200
Fax: (810) 244-1323

Appendix B

CASE STUDY DATA SHEETS

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***American Insulation Inc.***
2. Address. ***P.O. Box 91, Bloomer, WI 54724***
3. Telephone number. ***1(800) 633-3179***
4. Contact person and job title. ***Terri Stelter, General Manager***
5. SIC Code. ***2689***
6. Date your business started. ***1978***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Paper***

1.2. What are some of the advantages of using recycled vs. Virgin material?

1.3. What are the disadvantages?

1.4. What was one of the main reason for your company getting involved with recycled material? ***There was a market for the product.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from? ***MURF***

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? *Yes*

1.8. Do you recycle that waste? *No*

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Remain the same***

1.10. How many pounds of recycled material do you use a year? ***6,000 tons***

1.10.1. How much is post consumer material? ***Unknown***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? *No*

2.2. Did your present end product have any decision on using recycled materials? ***Yes, no other choice***

2.3. What is the end product manufactured from this material?

Fire proof insulation spray on

2.4. Are your customers aware that you use recycled materials? *Yes*

3.0 EQUIPMENT

3.1. How many square feet of your facility are involved with the recycled material? ***10,000 sq. ft.***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? *No*

3.5. Were more jobs created when you started to use the recycled material? *Yes*

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? *No*

3.7. Approximately how many employees do you have? *20*

3.8. Do you use any special equipment to handle your recycled material? *Yes* If so, what kind? ***Mainly standard equipment typical found in this type of manufacturing. For example, hammer mill used to extrude the paper through a screen to product the shape of the insulation.***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***ARW Polywood, Inc.***
2. Address.***P.O. Box 277, Lima, OH 45802***
3. Telephone number. ***(419) 224-2283***
4. Contact person and job title. ***Adam Wright, General Manager***
5. SIC Code. ***Unknown***
6. Date your business started. ***1989***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Plastic***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Less costly***

1.3. What are the disadvantages? ***Maintaining good color control***

1.4. What was one of the main reason for your company getting involved with recycled material? ***The company was into recycling and had a large supply of plastic***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Remain the same***

1.10. How many pounds of recycled material do you use a year? *NA*

1.10.1. How much is post consumer material? ***Approx. 50%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Plastic lumber (2X2, 2X4, 2X8, 2X10, etc.)

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***50,000 sq. ft.***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***Yes***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***15***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Extruders, Grainers***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? ***No***

1. Company name. ***Deja Shoe***

2. Address.***7165 SW Fir loop #200, Portland, OR 97223***

3. Telephone number. ***1 800 336 3352 or (503) 624 7443 and FAX 624 2620***

4. Contact person and job title. ***Mary Campbell, Communications Manager***

5. SIC Code. ***Unknown***

6. Date your business started. ***1990***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***P.E.T., Tire rubber, Eco Fiber (recycled cotton canvas), Polystyrene***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Environmental: reduction in landfill usage, and saves resources. Also created viability for recycled materials while quality is equal or better.***

1.3. What are the disadvantages? ***Testing of materials that have not existed for long and eliminating and reducing prejudices.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Founder (Julie Lewis) felt there must be something that could be manufactured out of recycled materials.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***Deja was awarded a state grant for its innovative approach.***

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. **X**

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two

years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***Not sure***

1.10.1. How much is post consumer material? ***Not sure since they buy from suppliers that collect from various places..***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***No.***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Casual/outdoor footwear

2.4. Are your customers aware that you use recycled materials? ***Yes, and Deja is always trying to make customers aware of the possibilities***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Don't Know***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started

to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***Only because Oregon is a progressive state as far as recycling, and huge portion of footwear industry is located in OR. (Nike and Avia)***

3.7. Approximately how many employees do you have? ***About 30 including sales reps who do not work directly for Deja.***

3.8. Do you use any special equipment to handle

your recycled material? ***Doesn't know*** If so, what kind? ***Shoes are actually manufactured off-site by subcontractor.***

Notes: ***Would also like to know how project turns out.***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? ***No***

1. Company name. ***East Penn Manufacturing Co., Inc.***
2. Address.***Deka Road, Lyon station, PA 19536-0647***
3. Telephone number. ***(215) 682-6361***
4. Contact person and job title. ***Ms. Grahret, Customer service***
5. SIC Code. ***Unknown***
6. Date your business started. ***1946 (recycling started in 1970)***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Batteries***

1.2. What are some of the advantages

of using recycled vs. Virgin material? ***Cost; Environmental concerns***

1.3. What are the disadvantages? ***No***

1.4. What was one of the main reason for your company getting involved with recycled material? ***To help environment by reducing battery supply***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***Yes***

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***20,000 batteries/day***

1.10.1. How much is post consumer material? ***100%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Batteries

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***225 acres***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***Not sure***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***2,500***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Acid reclaim plant; Breaker-Smashes batteries up; Separator-removes lead and composite material from each other; Ejection machines-Makes battery shells***

Notes: ***EPM is EPA approved.***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Evergreen Oil Inc.***
2. Address. ***6880 Smith Ave, Newark, CA 94560***
3. Telephone number. ***(510) 795-4400***
4. Contact person and job title. ***Jane Burns, Environmental manager***
5. SIC Code. ***Unknown***
6. Date your business started. ***1986***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Used lubricants and fuels***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Price/quality equivalent; reuse of non-renewable resource; No hazardous bi-products recycling process.***

1.3. What are the disadvantages? ***None***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Stated specifically for this.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***Yes, bond help in building orig. facility.***

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***No***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***18 million gallons per years.***

1.10.1. How much is post consumer material? ***100%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***No***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Fuel, Base lube oil, Asphalt flux

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***3 acres***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***Yes***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***NA***

3.7. Approximately how many employees do you have? ***Approx. 100***

3.8. Do you use any special equipment to handle your recycled material? Yes If so, what kind? ***Re-refinery- Distillation equip, heaters, containers, etc.***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers?

1. Company name. ***Fort Howard Corporation***
2. Address. ***1919 S. Broadway, Green Bay, WI 54307***
3. Telephone number. ***(414) 435 8821***
4. Contact person and job title. ***Janet Rodowca, Consumer Affairs Supervisor***
5. SIC Code. ***Unknown***
6. Date your business started. ***1929***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Post and Pre-consumer paper material , Office paper waste etc...***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Environmental advantages: reduce landfill use and saves resources (trees)***

1.3. What are the disadvantages? ***Consumers seem to be skeptical about use of recycled material in some instances.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***During W.W.II logging work force reduced by enlistment--so other sources for paper products had to be found***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? *Yes*

1.8. Do you recycle that waste? ***Yes, the waste is 100% recycled***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand and enhance***

1.10. How many pounds of recycled material do you use a year? ***1.3 Million tons/year***

1.10.1. How much is post consumer material? *NA*

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? *NA*

2.3. What is the end product manufactured from this material?

Sanitary paper products: paper towels, bath tissue, paper napkins etc...

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***3 Plant sites and all are very large but sq. ft. is unknown***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***Fort Howard is totally self sufficient. No.***

3.5. Were more jobs created when you started to use the recycled material? *No.*

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***All plants are located so they are near a large water source (like a river)***

3.7. Approximately how many employees do you have? ***Corporate total is about 6500***

3.8. Do you use any special equipment to handle your recycled material? ***Yes.*** If so, what kind? ***Doesn't know specifically but the raw material will determine the technology and equipment used.***

Notes: ***Janet Rodowca would be very interested in a copy of our information and results when project is completed.***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Hammer's Plastic Recycling Corp.***
2. Address. ***Rte. #3 Box 182 Iowa Falls, Iowa 50126-0182***
3. Telephone number. ***1 (800) 338-1438***
4. Contact person and job title. ***Susan Waters, National sales manager***
5. SIC Code. ***Unknown***
6. Date your business started. ***1987***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***PET, HDPE & LDPE***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Cost***

1.3. What are the disadvantages? ***Material contamination and machinery damage.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Evolved because of convenience***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***100 kips/week***

1.10.1. How much is post consumer material? ***Depends on material need.***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? *No*

2.2. Did your present end product have any decision on using recycled materials? *Yes*

2.3. What is the end product manufactured from this material?

Park benches, Picnic tables, Car stops, Speed bumps, Plastic lumber, Marine pilings.

2.4. Are your customers aware that you use recycled materials? *Yes*

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Unknown***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***Technical director***

3.5. Were more jobs created when you started to use the recycled material? *Yes*

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? *No*

3.7. Approximately how many employees do you have? *50*

3.8. Do you use any special equipment to handle your recycled material? *No* If so, what kind?

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***International Plastics Corporation***
2. Address. ***301 E. Vine St. Suite B Lexington, KY 40502***
3. Telephone number. ***(606) 887-2877***
4. Contact person and job title. ***Tom Click, Sales and computer tech support***
5. SIC Code. ***Unknown***
6. Date your business started. ***1987***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***PET, HDPE, LDPE***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Strength of product; reusability***

1.3. What are the disadvantages? ***None***

1.4. What was one of the main reason for your company getting involved with recycled material? ***General concerns, environment, etc.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***Lots***

1.10.1. How much is post consumer material? ***More than 50%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? *No*

2.2. Did your present end product have any decision on using recycled materials? ***Yes, Because all are plastic, industrial grade, for state contractors & there is no advantage in using virgin material.***

2.3. What is the end product manufactured from this material?

Road signs, Construction signage, sign posts, etc.

2.4. Are your customers aware that you use recycled materials? *Yes*

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Unknown***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***In developing proprietary data.***

3.5. Were more jobs created when you started to use the recycled material? *Yes*

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? *No*

3.7. Approximately how many employees do you have? *11*

3.8. Do you use any special equipment to handle your recycled material? *No* If so, what kind?

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Louisiana-Pacific Corporation***
2. Address. ***Feather River Boulevard Oroville, CA 95965***
3. Telephone number. ***(916) 534-6600***
4. Contact person and job title. ***Bob Greer, Manager Foreman***
5. SIC Code. ***Unknown***
6. Date your business started. ***1973***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Wood products (Shavings and chips)***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Cost savings and saving trees***

1.3. What are the disadvantages? ***Having to utilize materials that are available rather than those that may be more ideal.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Involved for a long time, before "push" existed for using rec. material upper management foresaw escalating cost of whole log operations.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☒

1.7. Do you produce waste from your recycled material? *Yes*

1.8. Do you recycle that waste? *Yes*

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***1 million tons/ day***

1.10.1. How much is post consumer material? ***5-10%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? ***Yes, (plant was designed to utilize recycled material)***

2.3. What is the end product manufactured from this material?

Wood panel products, cabinets, doors, etc.

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***All***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No, due to use of recycled material***

3.5. Were more jobs created when you started to use the recycled material? ***Not solely because of recycled material***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***160***

3.8. Do you use any special equipment to handle your recycled material? ***No*** If so, what kind?

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Martin Color-fi Incorporated***
2. Address. ***510 Augusta Rd, Edgefield, SC 29824***
3. Telephone number. ***(803) 637-5376***
4. Contact person and job title. ***Bob Varner, Sales rep***
5. SIC Code. ***Unknown***
6. Date your business started. ***1978***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***PET***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Availability, virgin material has to go through a process that is not required with recycled material.***

1.3. What are the disadvantages? ***Clean up; material loss during processing (Approx. 30% is loss in process)***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Initially started to recover silver from x-ray film (x-ray film is PET) silver became expensive, therefore PET recycling began.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from? ***MURF***

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? *No*

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***200 million lbs/year***

1.10.1. How much is post consumer material? ***100%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***No***

2.2. Did your present end product have any decision on using recycled materials? ***No***

2.3. What is the end product manufactured from this material?

Blankets, Carpet, Apparel, Paint rollers.

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Unknown***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes, Cleanup purposes and disposal of waste.***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***Yes***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***1000+***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Cleanup equipment***

Notes: *J*

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? ***Yes***

1. Company name. ***Meggison Enterprises***
2. Address. ***P.O. Box 11780 Arvada, CO 80001***
3. Telephone number. ***(303) 296-3439***
4. Contact person and job title. ***Chuck Bask, Sales Manager***
5. SIC Code. ***Unknown***
6. Date your business started. ***1979***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Rubber tires***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Reduced oxidization to sealant material; Takes less time to become usable (15-20 minutes); Cost less than virgin material; Overall a much stronger material become of tire material.***

1.3. What are the disadvantages? ***None***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Owner idea and need to utilize old tires***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***No***

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***One million lb./yr.***

1.10.1. How much is post consumer material? ***Depends on the specification by a particular county or state. (California is typically 24%)***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? *No*

2.2. Did your present end product have any decision on using recycled materials? *Yes*

2.3. What is the end product manufactured from this material?

Asphalt crack sealant

2.4. Are your customers aware that you use recycled materials? *Yes*

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Approx. 20,000 sq. ft.***

3.2. Were there any special building permits required to use your recycled material (Feasibility/EPA studies, OSHA requirements, etc.)? *No*

3.3. Were there any special operation permits required to use your recycled material (Feasibility/EPA studies, OSHA requirements, etc.)? *No*

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? *No*

3.5. Were more jobs created when you started to use the recycled material? *Yes*

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? *No*

3.7. Approximately how many employees do you have? *18*

3.8. Do you use any special equipment to handle your recycled material? *Yes* If so, what kind? ***Mixer: Mixes the rubber tires and the asphalt.***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Plastic Pilings Inc.***
2. Address. ***8560 Vineyard Suite 510, Rancho Cucamonga, CA 91730***
3. Telephone number. ***(909) 989-7685***
4. Contact person and job title. ***Sue McKenzie, Office Manager***
5. SIC Code. ***Unknown***
6. Date your business started. ***1988***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Plastic-HDPE/LDPE***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Gives a better bond to the commingled material***

1.3. What are the disadvantages? ***None***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Owner idea***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes, about 25%***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***Unknown***

1.10.1. How much is post consumer material? ***50%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? *No*

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Lumber

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Approx. 7000 Sq. ft***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? *No*

3.5. Were more jobs created when you started to use the recycled material? *Yes*

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? *No*

3.7. Approximately how many employees do you have? *15-20*

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Extruder: Produces the desired shape of the lumber; Blender: Mixes material; Water cooler: Cools extrusion as it exits the die.***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? ***Yes***

1. Company name. ***ReClaim, Inc.***
2. Address. ***12-24 3rd St., Keary, NJ 07032***
3. Telephone number. ***(201) 589-7767***
4. Contact person and job title. ***Dave Connelly, Manager***
5. SIC Code. ***Unknown***
6. Date your business started.

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Asphalt roofing -cold patch-***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Better ingredients using recycled material -from a structural stand-; the material in the roofing asphalt allows for better binding for the road asphalt.***

1.3. What are the disadvantages? *No*

1.4. What was one of the main reason for your company getting involved with recycled material? ***The high cost of disposing of the roofing asphalt in landfills***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes, nails***

1.8. Do you recycle that waste? ***Yes, sell as metal scrap***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***1000's of tons***

1.10.1. How much is post consumer material? ***95%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***No***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Road asphalt

2.4. Are your customers aware that you use recycled materials? ***Yes, very much so***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Unknown***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Unknown***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Unknown***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***Yes, landfill cost***

3.7. Approximately how many employees do you have? ***45-50***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Self manufactured asphalt roof crusher***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? ***Yes***

1. Company name. ***Recycled Plastics Industries, Inc.***
2. Address. ***1820 Industrial Dr. Green Bay, WI 54302***
3. Telephone number. ***(414) 468-4545***
4. Contact person and job title. ***Betty Jandron, Operations Manager***
5. SIC Code. ***Unknown***
6. Date your business started. ***1989***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Plastic***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Helping landfills; Material cost***

1.3. What are the disadvantages? ***Hard to handle; Quality of end product is sometimes more difficult to maintain.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Owners idea.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***Not sure***

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***Approx. 1.0 million pounds/year***

1.10.1. How much is post consumer material? ***100%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***No***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Lumber

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Not sure***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Not sure***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Not sure***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***12***

3.8. Do you use any special equipment to handle your recycled material? ***No*** If so, what kind?

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Resin Management Corporation***
2. Address. ***6712 N. 54TH St., Tampa, FL 33610***
3. Telephone number. ***(813) 626-0458***
4. Contact person and job title. ***Peter C. Blyth***
5. SIC Code. ***Unknown***
6. Date your business started. ***1981***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Plastic ,Acrylics, Pet, Nylon, Ethylene, Propylene and more.***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Less expensive***

1.3. What are the disadvantages? ***Must have a good understanding of process variations.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Owner was fired from his job and made the decision to start this business.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***30-50 Million lbs/yr.***

1.10.1. How much is post consumer material? ***99%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***No***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Reprocessed resin

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***30,000 sq. ft.***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/EPAstudies, OSHA requirements, etc.)? ***No***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No, owner liked weather in that area.***

3.7. Approximately how many employees do you have? ***16***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Large granulator***

Notes: ***Most equipment is standard plastic type machinery.***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Reynolds Metal Company***

2. Address. ***6601 W. Board St., Richmond, VA 23261***

3. Telephone number. ***(804) 281-2258***

4. Contact person and job title. ***Terry Olbrysh, Public Relations***

5. SIC Code. ***Unknown***

6. Date your business started. ***1919 as US Foil - 1928 Reynolds Metal Co.***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Aluminum***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Production cost; Energy costs may be as much as 1/3 the cost to produce primary aluminum.***

1.3. What are the disadvantages? ***Some overall weight loss in material cost when paint (label) evaporates during melt down.***

1.4. What was one of the main reason for your company getting involved with recycled material?

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***IN 1993 approx. 11 billion cans.***

1.10.1. How much is post consumer material? *33%*

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? *Yes*

2.2. Did your present end product have any decision on using recycled materials? *Yes*

2.3. What is the end product manufactured from this material?

Extrusion, sheet & cans.

2.4. Are your customers aware that you use recycled materials? *Yes*

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Avg. plant 10,000 sq. ft.***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? *No*

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***Yes, marketing people***

3.5. Were more jobs created when you started to use the recycled material? *Yes*

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***Yes, Generally in close proximity to heavy recycling areas.***

3.7. Approximately how many employees do you have? ***Total 29,000***

3.8. Do you use any special equipment to handle your recycled material? *No* If so, what kind?

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Roseburg Paving Co.***
2. Address. ***P.O. Box 1427, Roseburg, OR 97470***
3. Telephone number. ***(503) 679-6744 & (503) 440-4481***
4. Contact person and job title. ***Ben King (see note)***
5. SIC Code: ***Unknown***
6. Date your business started. ***1960; recycling in 1991***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Glass***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***See report***

1.3. What are the disadvantages? ***Cost about $11.00 more a ton when glass is used.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Slow down the dumping of glass in landfills***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***Yes, A $30,000 grant from Douglas county***

1.6. Where does most of your recycled material come from? ***Landfill***

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? *No*

1.8. Do you recycle that waste? *No*

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? *Yes*

1.10. How many pounds of recycled material do you use a year? ***See report***

1.10.1. How much is post consumer material? ***See report***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Asphalt (Hot mix)

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Unknown***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? ***No***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***No***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***180***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Feeder-Takes glass to mixer drum***

Notes: ***Roseburg paving has sub companies involved in the following: Rock plant; Cement plant; Paving plant and Boring plant***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Safety-Kleen Corp.***
2. Address. ***7001 W. 62nd St., Chicago, IL 60638***
3. Telephone number. ***(312) 229-1500***
4. Contact person and job title. ***Dave Dattilo, Senior VP, Sales and Service***
5. SIC Code. ***Unknown***
6. Date your business started. ***1987-Bought Grews Lube; 1991 Built largest re-refining refinery in the world, location Chicago***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Re-refined-base oil***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Recovery rate is 88% (12% waste); Cost less than obtaining virgin crude.***

1.3. What are the disadvantages? *No*

1.4. What was one of the main reason for your company getting involved with recycled material? ***The company originally started out as a re-refining oil producer.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☒

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes (all material that comes into the plant is converted into some product.***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***90 million gallons/yr.***

1.10.1. How much is post consumer material? ***Unknown***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Motor oils

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***18 acres***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? ***Yes***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***Yes***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***Yes***

3.7. Approximately how many employees do you have? ***30 (in Chicago area)***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Vacuum distiller and much more.***

Notes: ***The question, "Why do you feel that so many companies get involved in recycling are going out of business?" Mr. Hoffman felt that the that main reason most companies are going under is due to government bureaucracy and regulation. Note, he said California is the worst in the nation.***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Manufactures name. ***Scientific Developments Inc.***
2. Address. ***P.O. Box 2522, Eugene, OR 97402***
3. Telephone number. ***1 (800) 824-6853***
4. Contact person and job title. ***Gordon Exe, Sales***
5. SIC Code. ***Unknown***
6. Date your business started. ***1974***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Rubber Tries***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Resources readily available; Cost; Environmental concerns***

1.3. What are the disadvantages? ***Steel and nylon in tries***

1.4. What was one of the main reason for your company getting involved with recycled material? ***The abundancy of tires***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***Yes, For 2-3 years local government subsidized $1.00/per tire.***

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***No***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***100 ksi to 200 ksi/month.***

1.10.1. How much is post consumer material? ***100%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***No***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material? ***Dock bumpers***

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***30 acres***

3.2. Were there any special building permits required to use your recycled material Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.3. Were there any special operation permits required to use your recycled material (Feasibility/EPAstudies, OSHA requirements, etc.)? ***Yes***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***17-26***

3.8. Do you use any special equipment to handle your recycled material? ***Yes***

If so, what kind? ***Cracker mill***

Notes: ***SDI manufactures a large amount of rubber related products.***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Simpson Paper Company***
2. Address. ***400 Capitol Mall, Suite 900, Sacramento, CA 94104***
3. Telephone number. ***(216) 224-5700 ext. 5826***
4. Contact person and job title. ***Mark Pawlicki, SW Regional Public Affairs Manager***
5. SIC Code. ***Unknown***
6. Date your business started. ***1894-started recycling 1970's***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Paper***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Environment concerns***

1.3. What are the disadvantages? ***Sometimes there are problems with the ink bonding to recycled paper; Cost in some cases is more.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Company goals***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from? ***All three areas***

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☒

1.7. Do you produce waste from your recycled material? ***Yes, approx.***

1.8. Do you recycle that waste? *No*

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***200 tons/day***

1.10.1. How much is post consumer material? ***At least 10%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Paper products

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Not surc***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? ***Yes, in the areas that do de-inking.***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***8000***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***To main to list***

Notes: ***Mr. Pawlicki felt that there may be a problems in the future for manufacturing recycled paper because paper fibers shorten each time the paper is recycled. This eventually leaves a recycled product that is not usable for the manufacturing of recycled paper and will have to be used for some other end product.***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown free of charge to the State of California procurement officers? ***Yes***

1. Company name. ***Soil Safe***
2. Address. ***4600 East Fayette St., Baltimore, MD 21224***
3. Telephone number. ***(410) 327-5753***
4. Contact person and job title. ***Jim Grant, Director of Business Development***
5. SIC Code. ***Unknown***
6. Date your business started. ***1990***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Contaminated soil***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Cost less than virgin material (the producers of the contaminated material pay Soil Safe to take the soil)***

1.3. What are the disadvantages? ***None***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Soil Safe gets paid to take the material.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***No***

1.6. Where does most of your recycled material come from? ***From the producers of the contaminated material***

1.6.1 Curb side.

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***No***

1.8. Do you recycle that waste? ***No***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***Unknown***

1.10.1. How much is post consumer material? ***Unknown***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***No***

2.2. Did your present end product have any decision on using recycled materials? ***No***

2.3. What is the end product manufactured from this material?

Road base

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***.5 acres***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***Yes***

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? ***Yes, Oil operation permit; Air pollution permit; OSHA approved***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***Yes***

3.7. Approximately how many employees do you have? ***70***

3.8. Do you use any special equipment to handle your recycled material? ***No*** If so, what kind?

Notes: ***Grant mentioned that the contaminated soil is first put down, then covered with clean soil before the top material (asphalt) is applied.***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? ***NO***

1. Company name. ***Specialty Paperboard, Inc.***
2. Address. ***Burdies Road, P.O. Box 498, Brattleboro, VT 05302***
3. Telephone number. ***(802) 257-0365***
4. Contact person and job title. ***Peter Bedell, Marketing Assistant***
5. SIC Code. ***Unknown***
6. Date your business started. ***1988-Before that, it was affiliated with Boise Cascade.***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Post consumer paper (office paper)***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Environmental reasons, clean, safe.***

1.3. What are the disadvantages? ***End product may not last quite as long.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Because of cost effectiveness and environmental concerns.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***Unknown***

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***100%***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***If anything expansion***

1.10. How many pounds of recycled material do you use a year? ***Unknown***

1.10.1. How much is post consumer material? ***All***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? ***Not specifically- but more & more recycled material being used all the time***

2.3. What is the end product manufactured from this material?

Paperboard, Hanging file folders, Document cover folders

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Unknown***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? ***No***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***No***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***250***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Some machinery requirements that aid in the process. But nothing specifically brought in for use on only recycling material.***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Terra-Green Technologies Inc.***

2. Address. ***1650 Progress Drive, Richmond, IN 47374***

3. Telephone number. ***(317) 935-4760***

4. Contact person and job title. ***Sonia Brock, Customer service***

5. SIC Code. ***Unknown***

6. Date your business started. ***1987***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Glass***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Helps relieve landfills; Gives the title a better bond.***

1.3. What are the disadvantages? *No*

1.4. What was one of the main reason for your company getting involved with recycled material? ***Bought out a company that was already in the business, but was failing.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***Yes, A low interest low from local government.***

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☒

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? *No*

1.8. Do you recycle that waste? *No*

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***1.6 million pounds/year***

1.10.1. How much is post consumer material? ***18%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? *No*

2.2. Did your present end product have any decision on using recycled materials? *Yes*

2.3. What is the end product manufactured from this material?

Commercial tile

2.4. Are your customers aware that you use recycled materials? *Yes*

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? *42,000 sq. ft*

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *Yes*

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? *No*

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? *Yes, Ceramic engineer*

3.5. Were more jobs created when you started to use the recycled material? *Yes*

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? *No*

3.7. Approximately how many employees do you have? *Approx. 40*

3.8. Do you use any special equipment to handle your recycled material? *No* If so, what kind?

Notes: ***Future expansion***

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? ***Yes***

1. Company name. ***The Mat Factory***
2. Address. ***12838 Jackson Road 168, Findlay, OH 45840***
3. Telephone number. ***(419) 423-6963***
4. Contact person and job title. ***Joe Kinn, Vice President***
5. SIC Code. ***N/A***
6. Date your business started. ***1989***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Tires***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Tires are free***

1.3. What are the disadvantages? ***Different rubber types***

1.4. What was one of the main reason for your company getting involved with recycled material? ***To put wife back to work***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***No***

1.6. Where does most of your recycled material come from?

1.6.1 Curb side. ☒

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***No-tire bead***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Stay the same***

1.10. How many pounds of recycled material do you use a year? ***1500 tires/year***

1.10.1. How much is post consumer material? ***100%***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? *No*

2.2. Did your present end product have any decision on using recycled materials? *Yes*

2.3. What is the end product manufactured from this material?

Woven rubber mats

2.4. Are your customers aware that you use recycled materials? *Yes*

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***Less than 1500 sq. ft.***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? *No*

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? *No*

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? *No*

3.5. Were more jobs created when you started to use the recycled material? *Yes*

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? *No*

3.7. Approximately how many employees do you have? *2*

3.8. Do you use any special equipment to handle your recycled material? *Yes* If so, what kind? ***Cutter-cuts tires up tires; Punch-punches holes in tire strips; banner-connects strips together.***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Thermo-Kool of Alaska, Inc.***

2. Address. ***6348 Quinhagak, Anchorage, AK 99507***

3. Telephone number. ***(907) 563-3644***

4. Contact person and job title. ***Tom Davis, General Manager***

5. SIC Code. ***Unknown***

6. Date your business started. ***1977***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Paper***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Does not apply (insulation of this type is only made from recycled paper)***

1.3. What are the disadvantages? ***See 1.2***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Previous experience in the field of manufacturing insulation.***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***Yes, (Alaska state grant)***

1.6. Where does most of your recycled material come from? ***MURF***

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? *No*

1.8. Do you recycle that waste? *No*

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? *No*

1.10. How many pounds of recycled material do you use a year? ***10 tons/yr.***

1.10.1. How much is post consumer material? ***Unknown***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***No***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material?

Insulation

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***6,025 sq. ft.***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? ***No***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***No***

3.7. Approximately how many employees do you have? ***8***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Grinders, Bailer***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? ***No***

1. Company name. ***Vanguard Plastics Inc.***

2. Address. ***8950 Toronto St. Rancho Cucamonga, CA 91730***

3. Telephone number. ***(909) 980- 6053***

4. Contact person and job title. ***Robert Bailey, Production Manager***

5. SIC Code. ***Unknown***

6. Date your business started.

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***HDPE, LDPE***

1.2. What are some of the advantages

of using recycled vs. Virgin material? ***No real advantages***

1.3. What are the disadvantages? ***More costly; Does not process as well as virgin material; Slightly more waste using recycled.***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Public/customer demand .***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? ***No***

1.6. Where does most of your recycled material come from? ***Most material is purchased from a MURF.***

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed.

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year? ***1.5 millions/lbs year.***

1.10.1. How much is post consumer material? ***Unknown***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? ***Yes; In the mid 80's there was a demand to recycle grocery bags.***

2.3. What is the end product manufactured from this material?

Plastic grocery bags.

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***3,000 sq. ft.***

3.2. Were there any special building permits required to use your recycled material (Feasibility/ EPA studies, OSHA requirements, etc.)? ***No***

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? ***No***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***No***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***Yes***

3.7. Approximately how many employees do you have? ***95***

3.8. Do you use any special equipment to handle your recycled material? ***Yes*** If so, what kind? ***Mixing and blending equipment.***

Notes:

Recycling Products, Manufacturers, (Case Study Sheet)

A. Would you like your product shown **free of charge** to the State of California procurement officers? *No*

1. Company name. ***Watson Paper Company***
2. Address. ***1719 Fifth St. NW, Albuquerque, NM 87102***
3. Telephone number. ***(505) 242-9351***
4. Contact person and job title. ***Stephan Watson, Owner***
5. SIC Code. ***Unknown***
6. Date your business started. ***1979***

The following is a list of questions to ask :

1.0. FEEDSTOCK

1.1. What type of recycled material/s do you use? ***Cotton Denim***

1.2. What are some of the advantages of using recycled vs. Virgin material? ***Recycled cotton denim is stronger than the virgin wood fiber that is traditionally used to make paper***

1.3. What are the disadvantages? ***Price***

1.4. What was one of the main reason for your company getting involved with recycled material? ***Source and landfill reduction***

1.5. Were government subsidies or tax benefits a decision in using recycled materials? *No*

1.6. Where does most of your recycled material come from? ***Mfg. recycled material***

1.6.1 Curb side. ☐

1.6.2 Mfg. recycled material. ☐

1.6.3 Processed. ☐

1.7. Do you produce waste from your recycled material? ***Yes***

1.8. Do you recycle that waste? ***Yes, some is recyclable***

1.9. Do you have plans to expand or abandon the use of recycled materials within the next two years? ***Expand***

1.10. How many pounds of recycled material do you use a year?

1.10.1. How much is post consumer material? ***The amount varies***

2.0 MARKETS/ PRODUCTS

2.1. Were you an established company prior to getting involved with recycled material? ***Yes***

2.2. Did your present end product have any decision on using recycled materials? ***Yes***

2.3. What is the end product manufactured from this material? ***Denim Paper***

2.4. Are your customers aware that you use recycled materials? ***Yes***

3.0 EQUIPMENT

3.1. How many square feet of your facility in involved with the recycled material? ***25,000***

3.2. Were there any special building permits required to use your recycled material (Feasibility/EPA studies, OSHA requirements, etc.)? ***Yes***

3.3. Were there any special operation permits required to use your recycled material (Feasibility /EPA studies, OSHA requirements, etc.)? ***Yes***

3.4. Did you have to hire any specialty people to help manage the usage of you recycled material? ***No***

3.5. Were more jobs created when you started to use the recycled material? ***Yes***

3.6. Did the physical location of your facility have any impact on the decision to use recycled material? ***Yes***

3.7. Approximately how many employees do you have? ***25***

3.8. Do you use any special equipment to handle your recycled material? ***No*** If so, what kind?

Notes: